# CASE STUDY ON
# SANTHUVATHAM
## *(Polyarthritis)*

***Dissertation Submitted To***

**THE TAMIL NADU Dr. M.G.R. Medical University**

**Chennai – 32**

*For the Partial fulfillment for the Award of Degree of*

**DOCTOR OF MEDICINE (SIDDHA)**

**(Branch – III, SIRAPPU MARUTHUVAM)**


**DEPARTMENT OF SIRAPPU MARUTHUVAM**

**Government Siddha Medical College**

**Palayamkottai – 627 002.**

**OCTOBER - 2019**

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This is to certify that the dissertation entitled **"A STUDY ON SANTHUVATHAM** is a bonafide work done by **DR. C. GNANA SOUNDARIYA, (Reg No: 321613003) GOVERNMENT SIDDHA MEDICAL COLLEGE, PALAYAMKOTTAI** in partial fulfillment of the University rules and regulations for award of **M.D (SIDDHA), BRANCH - IIISIRAPPU MARUTHUVAM** under my guidance and supervision during the academic year **2016-2019 OCTOBER.**

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## DECLARATION BY THE CANDIDATE

I hereby declare that this dissertation entitled **"A STUDY ON SANTHUVATHAM"** is a bonafide and genuine research work carried out by me under the guidance of **Prof. Dr. A. S. POONGODI KANTHIMATHI., M.D(s).,** HOD, PG - Department of Sirappu Maruthuvam, Govt. Siddha Medical College, Palayamkottai and the dissertation has not formed the basis for the award of any Degree, Diploma, Fellowship or other similar title.

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| Dissertation Topic | An open clinical study to evaluate the efficacy of Siddha Polyherbal Medicine KODIVELI CHOORANAM[Internal], THIRUGUKALLI ENNAI [External] and OTTRADAM[External Therapy] for the treatment of SANTHU VATHAM[Polyarthritis] |
| Documents Filed | (1)Protocol (2)Data Collection Forms (3)Patient Information Sheet (4)Consent Form (5)SAE (Pharmacovigilance) |
| Clinical/Non Clinical Trial Protocol (Others-Specify) | Clinical Trial Protocol |
| Informed Consent Document | Yes |
| Any other Document | Case Sheet/Investigation Documents |
| Date of IEC Approval & its Number | 29.05.2017 , GSMC-IV IEC/2017/Br-III/13/29.05.2017 |

We approve the trial to be conducted in its presented form.

The Institutional Ethical Committee expects to be informed about the process report to be submitted to the IEC at least annually of the study, any SAE occurring in the course of the study, any changes in the protocol and submission of final report.

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**(Prof.Dr.R.NEELAVATHI MD(s).,Ph.D)**

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## CERTIFICATE OF BOTANICAL AUTHENTICITY

Certified the following plant drugs used in Siddha formulation **KODIVELI CHOORANAM (INTERNAL) &THIRUGUKALLI ENNAI (EXTERNAL)** for management of **SANTHUVATHAM(POLYARTHRITIS)** taken up for post-graduation dissertation studies by **Dr.GNANA SOUNDARIYA (REG.NO:321613003)** PG scholar, department ofSirappuMaruthuvam are correctly identified and authenticated through Visual inspection / Organoleptic characters / Experience, Education & Training morphology, microscopical and taxonomical methods.

## INGREDIENTS OF KODIVELI CHOORANAM

| S.NO | DRUG | BOTANICAL NAME | FAMILY | PARTS USED |
|---|---|---|---|---|
| 1 | Omam | *Carum copticum* | Apiaceae | fruit |
| 2 | Kodiveli | *Plumbago indica* | Plumbaginaceae | Root |
| 3 | perungayam | *Ferula asafoetida* | Apiaceae | Resin |
| 4 | Koshtam | *Saussurea costus* | Asteraceae | Root |
| 5 | Chukku | *Zingiber officinale* | Zingiberaceae | Rhizome |
| 6 | Sandhanam | *Santalum album* | Santalaceae | Wood |
| 7 | Devatharam | *Cedrus deodara* | Pinaceae | Wood |
| 8 | Thipili | *Piper longum* | Piperaceae | Fruit |
| 9 | Imbural | *Oldenlandia umbellata* | Rubiaceae | Whole plant |
| 10 | Vasambu | *Acorus calamus* | Acoraceaea | Rhizome |
| 11 | Karunjiragam | *Nigella sativa* | Ranunculaceae | Seed |

| | | | | |
|---|---|---|---|---|
| 12 | Maruthondri | *Lawsonia inermis* | Lythraceae | Root |

**INGREDIENTS OF THIRUGUKALLI ENNAI**

| S.NO | DRUG | BOTANICAL NAME | FAMILY | PARTS USED |
|---|---|---|---|---|
| 1 | Thirugukalli | *Euphorbia tirucalli* | Euphorbiaceae | Whole plant |

Station:Palayamkottai

Date: 3/4/18.

Authorized signature

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**METALS & MINERAL INGREDIENTS OF**

**KODIVELI CHOORANAM (INTERNAL)**

| S.NO | TAMIL NAME | ENGLISH NAME | CHEMICAL NAME |
|---|---|---|---|
| 1. | Indhuppu | Rock salt | Rock salt |

Station: Palayamkottai.

Date: 02.05.'18

Authorized signature

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Head of the Department
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Title of the Project : Anti- Inflammatory and analegesic activity of kodiveli chooranam

Proposal Number : AKCP/IAEC/85/2018-19

Date of received after modification (if any) : Nil

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Name of IAEC Chairperson : Dr.N.Venkateshan

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## INTRODUCION

India is a country of rich tradition and culture. Siddha system of medicine is a traditional medicine originate and practiced in ancient South India.

The predominant aim and object of Siddha Science is to assure the full span of long healthy life to enable ma acquire knowledge, cultivate good character and conduct with which they could enjoy their legitimate worldly pleasures & ultimately attain salvation. Moreover the diseases can be formed due to changes in the mind also. Mind is influenced by various stresses in our day to day life . But Siddhars quoted vey anciently that many of the diseases were caused by Psychosomatic problems. So that they had advised to control one's mind to get rid of stress. This was quoted by Agasthiyar as follows ,

"மனமது செம்மையானால் மந்திரம் செபிக்க வேண்டா
மனமது செம்மையானால் வாயுவை உயர்த் வேண்டா
மனமது செம்மையானால் வாசியை நிருத்த வேண்டா
மனமது செம்மையானால் மந்திரஞ் செம்மையாமே"

- ஞான பாடல்

According to Siddhars, human body is constituted by five basic elements which also constituted the environment viz Nilam (Earth), Neer (Water), Vayu (Air), Theyu (Fire), Agayam (Ether).

The Siddha system also recognizes the role of three humours called Mukkutram (Vatham, Pitham, Kabam). The normal functioning of human body is based on homeostatics of three vital forces or derangement in this homeostatics leads to pathologiacal condition called' Pini' or 'Noi'.

The factors which maintain constant homeostatics of these three humours are by six tastes (Arusuvai), life style, dietary habits and paruvakalam etc.

Siddhars classified disease into 4448 types. Siddhars diagnosing the diseases by means of envagai thervu which includes naadi , nerkuri and neikuri. Neerkuri and neikuri are the precious diagnostic tool.

The treatment aspect involves the neutralization of affected humours.

By giving viresnam (Purgation), vatha kutram is neutralised. By giving vamanam (Emetics) pithakutram is neutralised. Kabakuttram is neutralized by giving Anjanam and Nasiyam (application of medicine in the eyes as well as nose).

The advantage and unique features of Siddha medicine is the removal of root cause of the disease.

Medicine is defined as one which removes distress and leads an individual to perfect happiness(heavenly bliss).

From the above quoting, it is ideal to choose herbals initially, if no improvement then parpam and chendhuram are to be used.

Siddha physicians based their diagnostic on mukkutram and envagai thervu (eight entities) i,e Naadi (Pulse), Sparisam (Touch), Naa (Tounge), Niram (Colour), Mozhi (Voice), Vizhi (Eyes), Malam (Feces), Moothiram (Urine).

There are many diseases commonly affecting the middle aged and elderly people one among them is Yogi told 'Santhuvatham' which is given importance as it is mainly interfering with the principle function of human beings ( i,e) locomotion.

So here the author of this dissertation work has selected 'Santhuvatham' under the vatha diseases explained by munivar vaithiya chindhamani perunool 800 and a clinical entity comparable to polyarthritis in modern medicine.

Hence the author is interested to try effective remedy to this patients as said in Siddha literatures with the application of basic principles of Siddha and also supporting by Siddha and modern diagnostic parameters.

The medicine chosen to this disease are

1.KODIVELI CHOORANAM- INTERNALLY

Ref: Yugi vaithiya kaviyam

2.THIRUGUKLLI ENNAI- EXTERNALLY

Ref: Yugi vaithiya kaviyam

I have studied clinically santhuvatham on the basis of Siddha concept on coarse disease, diagnosis, prognosis, treatment, diet aspects and external therapy in my dissertation work.

## AIM AND OBJECTIVES

**AIM**

Phase II clinical study on "SANTHU VATHAM" (polyarthritis) and the drug of choice is "KODIVELI CHOORANAM" (Internal), "THIRUGUKALLI ENNAI" (External), and OTTRADAM ( External therapy)

**OBJECTIVE:**

**Primary objective**

To evaluate the Therapeutic efficacy of KODIVELI CHOORANAM (INTERNAL) & THIRUGUKALLI ENNAI (EXTERNAL) in the treatment of SANTHUVATHAM.

**Secondary objective:**

1. To evaluate the effect of otradam in the management Of SanthuVatham.
2. To evaluate the Siddha cofactor towards the efficacy of the trial drug KODIVEL CHOORANAM AND THIRUGUKALLI ENNAI and to evaluate the pharmacological actions.

# SIDDHA ASPECTS

## INTRODUCTION

கற்ற குருவாக்குங் காதலித்த வாகடமும்
பற்றுக் கோலொன்றே பரிகாரம் - முற்ற
அவன் பொறுப்பில்லா லொன்றுமாவதில்லை
யென்றே இவனுணரக் கீர்த்தி அங்கு

Siddha system of medicine is the oldest system of medicine in India. It is Dravidian origin and has it entire literatures in Tamil language. Its origin is lso traced to mythological sources belonging to the shaviam.

According to our Siddha system of medicine ,a human being is composed of 96 basic principles. Among them the first 30 is considered very vital and the rest are the manifestation or extension of the first 30 principles. These thathu are universal to all human beings in normal condition. This is not only consists of the physical components of the human body but also the mental, intellectual components like passions, qualities, knowledge, function of sense organs and motor organs and their co-ordination.

The basic of Siddha system are based on five basic elements of the universe, 96 thathuvam ,three humours and seven thathus. The three humours of the human system are vatham, pitham and kabam. In normal persons these three humours always gets deranged owing to a relative increase or decrease of any one or more of the principle humours which causes diseases.

The term ‘Vatham’ means ‘wind’ but the function of vatham is controlled by central nervous system as quoted in the Udal thathuvam. Like that the term ‘Pitham’ not only mean ‘Bile’ but signifies the function of thermogenesis or heat production and metabolism, comperhensing in its scope the process if digestion, coloration of blood formation of various secretion and excretions which are either the means or the end of tissue combustion and all the functions are controlled by Autonomous nervous system. The ‘Kabham’ not only mean ‘Phlegm’ but it is used primarily to imply the functions of heat regulations and secondarily formation of the various preservative fluids (e.g) mucus, synovium and its functions are maintained by cells. By knowing these basic principles we can easily study cause, classification, diagnosis and treatment of the disease.

**DEFINITION OF VATHAM**

Among the five elements ( Panchabothas) vatha is formed by the vayu and ahayam. This is one of the three humours (Vatha, Pitha, Kabam). The two other dhosas are set in motion by the vatha. In a healthy man the existence of three humours are in the ratio of 1:1/2:1/4 respectively.

வழங்கிய வாதம் மாத்திரை யொன்றாகில்
தழங்கிய பித்தந் தன் னிலரை வாசி
அழங்குப் கபந்தா னடங்கிய காலொடில்
பிறங்கிய சீவர்க்குப் பிசகொன்று மில்லையே

- குணவாகடம்

This ratio is altered when there is disturbance to the vatha by environmental factors, diet, habits, etc., vatha may be increased or decreased, vatha is altered, the other two are also altered to vatha disease.

**SYNONYM**

SANTHU VATHAM = SANTHU + VATHAM, SANTHU – joints, VATHAM – Derangement of the vatham constituent therefore, we can say that santhu vatham means the joints are affected by derangement of vatham.

In siddha system of medicine, a human being is composed of 96 basic principles, among them the first thirty is considered very vital and the rest are the manifestation on extension of the first 30 principles. These thathuvas are universal to all human beings in normal condition. This not only consist of the physical components of the human body but also the mental, intellectual components like passions, qualities, knowledge, functions of the sense and motor organs and also their coordination.

Pancha boothas are the foundations for three dosham vatham, piththam, kabam which are the pillars that support our body structure.

- Vaayu constitute vatham
- Theyu constitute piththam
- Appu constitute kabam

Any alterations in the level of mukkuttrams affect the normal functions of the body. This is obvious from the verses.

‘‘மிகினும் குறையினும் நோய்செய்யும் நூலோர்
வளிமுதலா வெண்ணிய மூன்று’’

- திருக்குறள் (மருந்து)

The food we eat has six tastes namely sweet, sour, salt, bitter, pungent, astringent.

Each of them is a mixture of two basic elements.

இனிப்பு - மண் + நீர்

புளிப்பு - மண் + தீ

உப்பு - நீர் + தீ

கைப்பு - வளி + ஆகாயம்

துவர்ப்பு - மண் + ஆகாயம்

கார்ப்பு - வளி + தீ

Relationship between Vatham and Suvai

**Aggravating tastes**

"புளிதுவர் விஞ்சுங்கறி யாற்பூரிக் கும்வாதம்
ஒளி யுவர்கைப் பேறில் பித்துச் சீறும் - கிளிமொழியே
கார்ப்பினிப்பு விஞ்சிற் கபம்விஞ்சு ஞ்சட்டிரதச்
சேரப்புணர் நோயணுகாதே"

- கண்ணுசாமியம்

According to this poem the sour and astringent tastes increase the vatha humour.

**Neutralising tastes**

"வாத மேலிட்டால் மதுரம் புளியுப்பு
சேதமுறச் செய்யுஞ் சிறையைம் - ஓதக்கேள்
காரந் துவர்கசப்புக் காட்டுஞ் சுவையெல்லாம்
சாரப் பரிகாரஞ் சாற்று"

- கண்ணுசாமியம்

According to this poem sweet, salt and sour can neutralise the vitiated vatha humour. Fate of three humours

"அறிந்திடும் வாதமடங்கு மலத்தினில்
பிரிந்திடும் பித்தம் பேராஞ்சலத்தினில்
மறிந்திடுமையம் வசிக்கும் விந்துவில்
உறைந்திம்மூன்றுக் குறவாந்த லமிதே"

- திருமூலர்

From the above quoting, it is clear that the three humours can be discharged through the following routes.

Vatha - Feces

Pitha - Urine

Kaba - Semen(sukkilam) /suronitham

**Formation of vatham**

“வந்த கலை மூன்றில் வாயுவாம பானனுடன்
தந்த பிராணன் சமானனும் சந்தமுறக்
கூட்டுறவு ரேசித்தல் கூறும் வாதம்
பித்தம்நாட்டுங் கபமேயாம் நாடு”

-கண்ணுசாமியம்

“இருப்பான நாடி எழுபதோடீ ரா
யிரமான தேகத்தில் ஏலப் - பெருநாடி
ஒக்கத சமத்தொழிலை யூக்கதச வாயுக்கள்
தக்கபடி யென்றே சாரும்
சாருந் தசநாடி தன்னில் மூலம் மூன்று
பேருமிடப் பிங்கலையும் பின்னலுடன் - மாறும்
உரைக்க விரற் காற்றொட்டுணர்த்துமே நாசி
வரைச் சுழியோமையத்தில் வந்து”

-நோய்நாடல் நோய்முதனாடல்

According to this the human body is composed of 72,000 naadi narambukal. Among this 72,000, ten are prominent naadies (Dasa naadies). Of these ten naadies, Idagalai, pingalai and suzhumunai are known as moolaathara naadies.

Among the ten vayus five are more important. These are piranan, abanan, viyanan, udhanan and samanan.

| | | | | |
|---|---|---|---|---|
| அபானன் | + | இடகலை | = | வாதம் |
| பிராணன் | + | பிங்கலை | = | பித்தம் |
| சமானன் | + | சுழுமுனை | = | கபம் |

Abanan in conjunction with idagalai to produce vatha.

Piranan in conjunction with pingalai to produce pitha and samanan in conjunction with suzhumunai to produce kapha.

These three humours or thadhus i.e., vatha, pitha and kapha are the functional principles in the composition and substance of the body.

**Location of vatham**

**Below the navel**

"நாமென்ற வாதத்துக் கிருப்பிடமே கேளாய்
நாபிக்குக் கீழென்று நவிலலாகும்" - யூகிமுனி

**Location**

Vatham lives in

- Abanan Stools
- Idakalai
- Undhiyin keezh moolam
- Kaamakodi
- Hip bone
- Skin
- Nerves
- Joints
- Hair follicles and
- Muscles

**Natural properties of Vatham**

**Physiologically**

- Giving briskness
- Inspiration and expiration
- Functioning the mind, thoughts and body
- Regulation of the fourteen physiological reflexes (vegangal)
- Uniform function of the seven udal kattugal
- Protection and strengthening of the five sensory organs.

**RECOGNITION OF VATHAM**

Vatham can be recognized in the body by various ways one among the best in form the pulse.

**CLASSIFICATION OF VATHAM**

Vatha can be classified into ten types. This has been said in Yugimuni 800 as follows.

"முறையாம் பிராணனோ டபானன் வியானன்
மூர்க்கமா முதானனொடு சமான னாகம்
திறமை யாங் கூர்மனொடு கிருகரன்றான்
தேவ தத்த னொடு தனஞ் சயனுமாகும;" - யூகிவைத்திய சிந்தாமணி

1. Pranan
2. Abanan
3. Viyanan
4. Udhanan
5. Samanan
6. Nagan
7. Koorman
8. Kirugaran
9. Devadhaththan
10. Dhanajeyan

Each one is responsible for various actions within the body.

**1. Piranan:-** (Heart Centre)

It refers to the chest and it regulates the respiratory system and helps the digestive system.

**2. Abanan:-** (Muladhar Centre)

The type of vatha corresponds to the pelvic and it is the seat of kundalini energy and controls excretions such as sweating, evacuation of stools, ejaculation of sperms, micturition, menstruation and parturition(delivery of child). Abana vayu is one of the 14 physiological reflex actions (Vegas) of the body. When its expulsion is partially or completely obstructed it leads to diseases like vayu gunmam, kudal vatham, vali vatham.

**3. Udhanan:-** (Throat center)

This corresponds to the pharyngeal plexus in the throat region and controls breathing and speech. It is also responsible for the physiological reflex actions like vomiting, hiccough, cough etc.

**4. Vyanan:-**

It helps in the circulation of energy through the entire nervous system and helps in the movements of various parts of the body. It is responsible for the tactile sensation.

**5. Samanan: -** (Navel center)

This corresponds to the solar plexus etc. By balancing the other vayus, the six tastes, water and food any one of the vayus is affected, this samanan is also affected.

**6. Naagan :-**

It is responsible for the intelligence of an individual. It helps learning different arts, singing of good songs etc. It is responsible for blinking, opening of eyes and eyebrow raising.

**7. Koorman :-**

This is responsible for yawning, closing of mouth, yielding strength and also blinking. It helps closing and opening of the eyes and shedding of tears. It is responsible for the vision.

**8. Kirukaran :-**

It is responsible for the salivation in the oral cavity and mucous secretion in the nasal cavities. It is responsible for good appetite. It helps in meditation. It produces cough and sneeze.

**9. Devadhathatan :-**

It is responsible for the laziness and also lassitude while waking up. It helps movements of the eyeball in various directions. It is responsible for quarrelling, arguing etc., and also for much anger.

**10. Dhananjeyan :-**

It is responsible for the swelling all over the body. It produces sensation of roaring like the sea in the ears. It leaves the body by blowing up the cranium on the $3^{rd}$ day after death.

**SIGNS AND SYMPTOMS OF VATHA DISEASE:-**

- Pricking pain
- Dull pain
- Aching pain
- Tremors
- Palpitation
- Spasm
- Dryness or dehydration
- Dislocation of joints
- Weakness of the body
- Paralysis
- Constipation
- Oliguria

- Excessive thirst
- Astrigent taste predominantly in the mouth
- Excretions like stools, urine, lacrimiation, sweat, becomes black in colour.

**ATTRIBUTES OF VATHAM:**

**வாதத்தின் குணம்:**

- வறட்சி - Dryness
- குளிர்ச்சி - Coolness
- அணுத்துவம் - Subtlety
- கடினம் - Roughness
- அசைத்தல் - Mobility

**INFLUENCE OF VATHAM IN MONTHS:**

‘‘வாதவர்த் தன காலமேதோ வென்னில்
மருவுகின்ற ஆனி கற்கட மாதம்
ஆதனைப் பசியோடு கார்த்திகை தன்னில்
ஆடருமே மற்ற மாதங்கள் தன்னில்
போகவே சிமிக்கின்ற காலமாகும்’’ - யூகி சிந்தாமணி

According to this poem vatha may be influenced in the following months normally. They are Aadi, Avani, Purattasi, and Iypassi.

**AGONIST QUALITIES OF VATHAM: -**

Normal qualities of vatha are,

- Dry
- Cold
- Subtle
- Rough
- Unstable
- Light

**ANTAGONST QUALITIES OF VATHAM**

- Unctuous ‘Hot
- Solid
- Soft
- Stable
- Heavy

**SIGNS OF HYPERVATHAM**

- Constipation
- Abdominal disturbances
- Fatigue
- Depression of sense organs
- Giddiness
- Incoherent speech
- Rigors
- Insomnia
- Fond of eating hot food stuffs
- Emaciation with blackish discolouration
- Loss of vigour.

**SIGNS OF HYPOVATHAM**

- Vague pain all over the body
- Low-pitched voice.
- Difficulty to do any work.
- Reduction of intelligence
- Syncope
- Symptoms of hyperkapha.

**ALTERNATION OF VATHAM**

The types of alternation of vatham

1. Thannilai valarchi

   Provoked kuttram in its own location is called thannilai valarchi during mudhuvenil kalam (Aani- Aadi).

2. Vettrunilai valarchi

   Provoked kuttram to other location is called vettrunilail valarchi. During kaarkalam (Aavani- Puratasi).

3. Thannilain valarchi

   Provoked mukkutram neutralizing in its own property is called Thannilai valarchi. Duration : Vatham gets neutralized during Koodhir kalam (Iypasi- Karthigai).

**CHARACTERISTIC FEATURES OF VATHAM**:

‘‘வாதமே கதித்த போது வாயுவ மெழும்புங் காண்டீர்
வாதமே கதித்த போது வாயுவந்திடுஞ் சன்னிதோஸம்
வாதமே கதித்த போது வல்லடுன்மெலிந்து கொல்லும்

- அகத்தியர்சிகிச்சாரத்னதீபம்

வாதம் மிகும் போது சன்னிதோடம் போன்ற பல வியாதிகள் வந்து சேரும் உடல் மெலியும்.

‘‘வாதவீறு அன்னமிறங்காது கடுப்புண்டாம் வண்ணமுண்டாம்
மோதுகட்டு ரோகம் சுரமுண்டாம் மிருமலுமா முறங்காதென்றும்
ஓதுசுரிய வாத மனலாகு நடுக்க முண்டாம் பொருள்களாய்த்
தீதனவே நரம்பிசித்து சந்துகள் தோறும் கடுக்கும் தினமும் தானே’’

- தேரன் வாகடம்

Loss of appetite, pain and discoloration, fever and cough, insomnia, tremors, pain in all the joints of the body are the characteristics of vatha diseases.

**PITHAM:**

Pitham is responsible for all the transformation. Pitham is located in urinay bladder, heart, head, umbilicus, abdomen, blood, sweat, skin and eye. Pitham is classified into 5 types. They are,

- Anar Pitham - Responsible for digestion of food.
- Ranjaga Pitham - Responsible for colour of blood.
- Sathagam - Located in heart and is responsible for normal activities of the body.
- Alosagam - Responsible for normal vision.
- Prasagam - Responsible for the complexion of skin.

**KABAM:**

Kabam stabilizes, maintains and lubricates all movements. Kabam is found in samanan, semen, brain, head, tongue, nose, bones, bone marrow, fat, nerves, chest, blood, large intestine, eye, stomach and pancreas. Kabam is classified into 5 types, they are:

- Avalambagam :

  Lung is the center for avalambagam. It controls all other forms of kabam.

- Kilethagam :

  Stomach is the center for kilethagam. It gives moisture and softness to the ingested food and helps for digestion.

- Bothagam :

  Tongue is the centre for bothagam and it is responsible for the sense of taste.

- Dharpagam :

  Head is the center for Dharpagam. It gives cooling effect to eyes.

- Santhigam :

  It lies in the joints and is responsible for the locomotive action of movable bony joints.

**THINAIGAL**

**Kurinji**

Physiological function: Mountain and its surroundings

Features in santhu vatham: Kabanoi liver disease are common

**Mullai**

Physiological function: Forest and its surroundings

Features in santhu vatham: Pitha and vatha disease liver disease and common

**Marutham**

Physiological function: Field and its surroundings

Features in santhu vatham: Safest place to maintain good health

**Neithal**

Physiological function: Sea and its surroundings

Features in santhu vatham: Vatha disease and liver enlargement are common

**paalai**

Physiological function: Desert and its surroundings

Features in santhu vatham: Vatha pitha and kabha disease and common

Most of the patients came from Marutha nilam. Patients were also reported from neithal nilam.

**UDAL VANMAI**

It means strength and vitality of the body and classified into three types.

Eyarkai vanmai- Inherited immunity

Kala vanmai – Age, season and time

Cheyarkai vanmai – improvement of 3 vitality obtained by diet, day to day habits and physical exercises.

## SANTHU VATHAM

Santhu vatham is one of the vaatha diseases which is described in "Yugi vaithya chinthamani".

**Definition**

The term santhuvatham denotes all kinds of joint disease caused by the derangement of one of the uyirthathus "Vatham".

In the same literature it is mentioned such type of joint disease as megasoolai under the chapter of "Soolai noikal". In some other literatures, joint disorders are mentioned in different names.

Santhuvali, muttuvali, megasoolai, mudakkuvayu, ama vatham, keelvayu- Siddha maruthuvam.

Sangeegasileshmarogam, Santhu vatham, soolaikattu, vatha soolai, vayurogam- vaidya sara sangiraham.

In vaidya sarasangiraham, alias Agasthiyar Vaidhiya Kaviyam, Agasthiyar Gunavahada Thirattu and Thirumoolar Karukkidai Vaidhiyam 600, joint disorders were explained in the name of Soolai, because of excruciating pain caused by such diseases. Since it causes pain in the Santhu or muttu, it is called asmuttuvali or santhuvali. Restriction of movements and in some cases even immobility of the joints can occur, so it may be named as Mudakku vayu or Mudakku vatham. Thus the terms of this diseases are named according to the causes of derangement of the Uyirthathu, Kurikunam, site of lesion,complication etc.

**They are as follows;**

| **Causes** | | **mega soolai** |
|---|---|---|
| ➢ Derangement of the vatha | - | Uyirthathu vatha soolai, santhu vatham |
| ➢ Derangement of the Kapha | - | Uyirthathu santheega sileshma rogam |
| ➢ Kurikunam | - | Soolai kattu |
| ➢ Site of lesion | - | Muttuvali, santhuvali, keelvayu |
| ➢ Complication | - | Mudakku vatham |

பொதுவாக அழற்சியினால் உடம்பில் முழங்கால் முதலிய பொருத்துகளைத் தாக்கி வீக்கங்கண்டு வலியுடன் கீல்களைச் சுற்றியுள்ள சவ்வுகளில் காணும் ஓர்வாத நோய் இது முழுபாகம் அல்லது ஓர்பாகம் மாத்திரம் வலி கொள்ளலாம். இது சாத்தியமும் அல்லது அசாத்தியமுமாக இருக்கலாம்.

-டி.வி.சாம்பசிவ பிள்ளை.

A term generally employed to inflammation of the joints, swelling with pain affects the whole or greater part of the fibrous structures which surrounds the joint, it may be partial or complete and it could be cured or not cured.

"செய்கைதான் சந்துகளு மிகத் திமிர்ந்து
செடமெங்கு நொந்துமே மிகவழற்றி
நைகையாய் நளுத்துமே மயிர்கூச்சிட்டு
நாணியே முன்போல நடை கொடாது
மைகைதான் மயக்கமொடு வாய்நீருறும்
வரண்டிடுமே நாவுதான்டிக் கடிக்கு
கைதான் தரணிதனற்றரிக் கொணாது
சஞ்சலிக் குஞ்சந்துவாம் வாதங்கேளே

- யூகிவைத்திய சிந்தாமணி

**SYNONYMS:**

Santhuvali (சந்துவளி)

Moottuvali (மூட்டுவலி)

Megasoolai (மேகசூலை)

Mudakkuvaayu (முடக்கு வாயு)

Aama vatham (ஆமவாதம்)

Keelvayu (கீல்வாயு)

- Siddha maruthuvam

Santheega sleshmarogam (சந்திகசிலேஷ்ம ரோகம்)

Santhu vatham (சந்து வாதம்)

Soolaikattu (சூலை கட்டு)

Vathasoolai (வாதசூலை)

Vayu rogam (வாயு ரோகம்)

- Vaidya sara sangiraham

In vaidya sarasangiraham

Agasthiyar vaidhya kaviyam

Agasthiyar Gunavahada thirattu

Thirumoolar karukkidai vaidhyam 600,

Santhu vatham was explained in the name of soolai, because of excruciating pain caused by such diseases.

Since it causes pain in the santhu or moottu, it is called as moottuvali or sandhuvali.

Restriction of movements and in some cases even immobility of the joints can occur, so it may be named as mudakku vaayu or mudakku vaatham.

Thus the terms of this disease are named according to the cause, derangement of the uyirthathu, kurigunam, site of lesion, complication etc.

In TV Sambasivampillai medical dictionary Santhuvatham is described as

"சந்துவாதம் - பொதுவாக அழற்சியினால்
உடம்பில் முழங்கால் முதலிய பொருத்துகளை
தாக்கி வீக்கம் கண்டு, வலியுடன் கீல்களை
சுற்றியுள்ள சவ்வுக்கு காணும் ஓர் வாத நோய்".

A form generally employed to inflammatory disease acute or chronic of the whole or greater part of the fibrous structures that constitute the formation of a joint-arthritis.

**According to Agasthiyar Rathina surukkam**

The character of vatha vitiations are joint pain, fever, nausea, body aches, constipation and excessive sweating.

**According to Theraiyar vagadam**

Indicates vatha vitiation causes cough, loss of sleep, swelling of interphalangeal, tarsal, metatarsal joints and bony prominence, stiffness of the body and excessive salivation. In santhuvatham disease mostly affected types of pitham are sadhakam, ranjakam and prasaga pitham.

**According to Yugi vaidya chinthamani**

"சந்துகள் மிக திமிர்த்து உடம்மெல்லாம்
மிக நொந்து மயக்கம் வாய் நீருறல்,கைகால்
பூமியில் தரிக்கவொண்ணாது வலியை உண்டாக்கும்
வாதநோய்".

"Rheumatism is characterised by inflammation with the thickening of the fibrous tissues, body pain, giddiness, salivation and unbearable pain in the limbs rendering the patient unable to stand firmly".

**According to Siddha maruthuvam (text book)**

செய்கைதான் சந்துகளு மிகத்திமிர்ந்து
செடமெங்கு நொந்துமே மிகவழற்றி
நைகையாய் நளுத்துமே மயிர்க்கூச்சிட்டு

நாணியே முன்போல நடைகொடாது
மைகைதான் மயக்கமொடு வாய்நீறும்
வரண்டிடுமே நாவுதான டிக்கடிக்கு
கைகால்தான் றரணிதனிற் றரிக்கொணாது
சஞ்சலிக் குஞ்சந்துவாம் வாதங்கேளே''.

Santhuvatham is a disease characterised by difficulty in walking and inability to do the works with hands and legs as usual due to stiffness of joints and pain of the body. Extra articular symptoms associated with this disease are excessive salivation, dryness of tongue, lassitude and lethargy.

It is a disorder of joints (santhu) where bone, muscles, tendons, ligaments and associated structures binds together, for the purpose of locomotion of the body, caused by deranged humour vaatha.

Many literature references reveals above mentioned conditions associated with pathological conditions of vatha derangement.

''வாதமே வாயுவாகும் வாதமே காலிற்சேரும்
வாதமே கன்னியொடு மருவிடில் வலிவுமுண்டாம்''

- பரராச சேகரம்

வாதமே கதித்தபோது வாயுவ மெழுப்பு மீரும்
சொல்லவே வாதமது மீறிற்றானால்
சோர்வடைந்து வாயுவினால் தேகமெங்கும்
மெல்லவே கைகால்கள சதியுண்டாம்
மெய்முடங்கும் நிமிரவொண்ணாத் திமிருண்டாகும்
மெல்லவே யுடல் பொருமுன் வயிறுளைக்கும்
விரும்பிய ன்னஞ் செல்லாது விந்துநட்டம்
கொல்லவே நாப்புக்கும் காய்ச்சலுண்டாம்
கூறினார் மாலையமுனி கூறினாரே'' -அகத்தியர் சிகிச்சா ரத்தின தீபம்

Manifestations of vaatha vitiations are pain in extremities and joints, abdominal distension, swelling, immobilization of joints and stiffness, perverted taste, anorexia, fever etc.,

**When vathakapha gets deranged,**

''வளிமையுந் தன்னிலை கெட்டு
வலியுடன் வீக்கச் சுரமும் காய்ந்து
மூட்டுகள் தோறும் முடுக்கியே நொந்து
மூட்டுகள் தன்னில் நீரும் சுரந்து
தாங்கொணா வலியுடன் நொந்திடுமம்மே''

Its manifestation are pain, swelling and fever associated with unbearable pain of the joints and increased secretion of synovial fluid.

**Clinical features of santhuvatham**

"வாதபித்தக் கீல்வாயுவின் வருங்குறி சாற்றக் கேளாய்
ஏதமார் மந்த மேப்பம் இரைச்சலும் வயிற்றில் நாணும்
ஓதருங் குத்தல் வீக்கம் ஓய்தலின் எரிச்சலுண்டாம்
காதறுமுறக்க மின்மை காய்சலுங் காணுங் கண்டாய்".

- சபாபதி கையேடு

- Indigestion (Mantham) Eructation - Yeppam
- Borborymus of the abdomen
- Pricking pain
- Burning sensation
- Swelling of the affected joints, fever, insomnia and laziness.

**Complications of Santhuvatham**

As the disease progresses, joint diseases leads to deformity and immobilization of the limbs. In Siddha system such conditions are named as mudakku vatham,

"பத்திய வாதந்துயத்து பாகுமே பயித்தியத்தால்
எத்திய நரம்பிமுத்து மேலதுஞ் சுருண்டு கொள்ளும்
குத்தியே துளைத்தாற் போல் குடைந்து காலடைந்து காணு
மற்றிது முடக்கு வாதமா மெனக் கருதலாமே".

- யூகிமுனிவர் பெருநூல் வைத்தியகாவியம் -1000

It denotes, in mudakku vadha condition body will bend forward and rounding the shoulder probably due to vertebral column deformity (Hang dog position).

**Envagai Thervugal includes**

Naadi, sparisam, naa, niram, mozhi, vizhi, malam, moothiram.

**Naadi (pulse)**

"அறிந்து பார் வாதமே தனித்த தானால்
அன்னம் போல் நடக்குமப்பா நாடி பாரு
சரிந்திடவே கால் முடக்கும்போது காட்டும்"

- அகத்தியர் ரத்தின சுருக்கம்

Vitiated vatha causes difficulty in walking or impaired function of lower extremities. The examination of naadi has been recognised as one of the principle means of diagnosis and prognosis of disease from times immemorial.

**Sparisam (skin)**

Skin examination can be made out by touch and reveals about warmness, chillness, dry, weeping, skin rough, smooth, soft, hard, tenderness or presence of ulcers, swelling, wrinkles, hair, pigmentation etc., Naa (Tongue)

The colour, character and condition of the tongue changes according to the changes in mukkutrum.

**Niram (colour):**

As vaatha is the root cause the colour of the patient's skin, tooth etc., should be dark or black in colour.

**Mozhi (Speech):**

Speech in vatha patients may vary according to the deranged dhosas and grade of the disease.

**Vizhi (Eye):**

Burning of the eyes, lacrimation, irritation, colour changes are also noticed under this group. In Santhuvatham patients no changes in the eyes.

**Malam (stools):**

In Santhuvatham patients stools should look in dark colour with constipation.

**Moothiram (urine) :**

"உறைந்த நீருங் கரு கருத்து
முறையாய் ரோகமு முண்டாமே"
"அரவென நீண்டிடின.்தே வாதம்" -அகத்தியர் நாடி

When the oil drop spreads like a snake it indicates vathaneer.

**PROGNOSIS**

A full of knowledge about prognosis will save the patient as well as the physician from considerable difficulties. The knowledge of prognosis is most important for a physician to have a perfect and proper line of treatment and prevention. In santhuvatham the course of the disease is depend on the pirakiruthi disturbed vatha, pitha, kabha and kalavanmai, cheyarkai vanmai and stages of the disease. Prognosis depends on the affected thridosha. Commonly it is difficult to yield permanent care, later stage of the disease produce ankylosis. Gradually all movements joints becomes restricted.

**UYIR THATHUKAL**

**Vatham**

**Table 3.1**

| S.NO | Vatham | Pysiological function | Features in Santhuvatham |
|---|---|---|---|
| 1. | Pranan | Inspiration and expiration responsible for sneezing coughing and belching. | Not affected |
| 2. | Abanan | Act with downward movement. | Affected( constipation) |
| 3. | Viyanan | Helps in various movements of body, responsible for sensation. | Affected ( restricted movement of affected joints radiating pain also present with tingling. |
| 4. | Udhanan | Regulates the higher functions of brain. Responsible for physiological reactions like hiccough and vomiting. | Not affected |
| 5. | Samanan | Regulates all other vayus | Affected |
| 6. | Nagan | Responsible for intelligence helps in opening and closing of eyes. | Affected in aged patients. Acuity of vision is diminished. |
| 7. | Koorman | Responsible for lacrimation. Helps in visualization of all things of world | Not affected |
| 8. | Kirukaran | Salivation, mental agony | Not Affected |
| 9. | Thevathathan | Responsible for laziness. Rotation of eyeballs. | Affected in sleeplessness patients. |
| 10. | Thanajeyan | Responsible for tinnitus oedema. | |

**Pitham**

**Table 3.2**

| S.NO | Pitham | Physiological functions | Features in santhuvatham |
|---|---|---|---|
| 1. | Anapitham | Digests all the ingested particles. | affected |
| 2. | Ranjaga ptham | Increases the blood and gives colour to the blood | Affected |
| 3. | Santhiga pitham | Makes the works to complete what mind thinks to do. | Affected (restricted) movements and pain present. |
| 4. | Prasaga pitham | Gives colours to skin. | Not affected |
| 5. | Alosaga pitham | Responsible for clear vision. | Affected in old age peoples. |

**Kabam**

**Table 3.3**

| S.NO | Kabam | Physiological function | Features in santhuvatham |
|---|---|---|---|
| 1. | Avalambagam | Controls other 4 types of kabam | Affected |
| 2. | Klethagam | Moistens the food | Not affected |
| 3. | Bothagam | Helps to know the taste | Not affected |
| 4. | Tharpagam | Gives cooling effect to the eyes | Not affected |
| 5. | Santhigam | Gives lubrication to joints | Affected ( pain and restricted movements present) |

**SEVEN PHYSICAL CONSTITUENTS OF BODY**

**Table 3.4**

| S.NO | Kabam | Physiological function | Features in santhuvatham |
|---|---|---|---|
| 1. | Saram | Strengthens the body and mind | Affected |
| 2. | Seneer | Preserves brightness, boldness, power& knowledge | Affected |
| 3. | Oon | Gives structure and shape to the body | Early stage- not affected<br>Later stage – Affected |
| 4. | Kozhuppu | Responsible for movement lubricants the joint | Affected |
| 5. | Enbu | Responsible for joint movements | Affected |
| 6. | Moolai | Present inside the bones and gives strength to the bones | Affected |
| 7. | Sukkilam or Suronitham | Responsible for next generation of human beings. | Not affected. |

**Thinai (land and place)**

The geographical distribution of the land is classified into five regions.

1. Kurinji - Mountain and its surroundings
2. Mullai - Forest and its surroundings
3. Marutham - Field and its surroundings
4. Neithal - Sea and its surroundings
5. Paalai - Desert and its surroundings

Accordingly, vaatha diseases are common in neithal nilam. Palai nilam-common places for all types of diseases. Marutha nilam is good for all types of treatment and health

**Kalam**

According to siddha system the year is divided into six seasons with reference to the position of earth and sun.

| S.No. | Paruvakalangal | Kuttram | |
|---|---|---|---|
| 1. | Kaarkalam – | August, September (ஆவணி, புரட்டாசி) | Vatham ↑ ↑Pitham ↑ |
| 2. | Koothirkalam - | October, November (ஐப்பசி, கார்த்திகை) | Vatham (-)Pitham ↑ ↑ |
| 3. | Munpanikalam- | December, January (மார்கழி, தை) | Pitham ↑ |
| 4. | Pinpanikalam - | February, March (மாசி, பங்குனி) | Kabam ↑ |
| 5. | Ilavenilkalam - | April, May (சித்திரை, வைகாசி) | Kabam ↑ |
| 6. | Muduvenilkalam - | June, July) (ஆனி, ஆடி) | Vatham ↑ Kabam (-) |

**Kabam (-)Kaarkalam**

"வெளிச் சுழல் தட்பத்தை விஞ்முட் சூட்டை
அளித்துரிக்கு நேர்செயுமால் யாக்கைக் - களி செரி
வன்னிய.ம்.கும் காணத்தால் வாதாதி முத்தோடம்
நன்னிலையில் நில்லா நவில்"

- மருத்துவ தனிப்பாடல்

These above mentioned poem stated that the kaar and muthuvenil kalam are seasons for vatha diseases

**SANTHUVATHAM AFFECTED IN 96 THATHUVAM**

**Table 3.5**

| S.NO | Thathuvam | Affected thathuvam | Symptoms |
|---|---|---|---|
| 1. | Bootham | Mun, Appu, Vayu and Aagayam | Deranged vatham4 boothams |
| 2. | Pori | Mei | Aagaya bootham develops Mei |
| 3. | Pulam | Ooru | Pain and tendness |
| 4. | Kanmenthiriyam | Kaal and Kai | Pain, numbness, weakness, destroying, loosening,burning |
| 5. | Kanmavidayam | Kamanam, Thamanam | Difficulty to normal movements in limbs |
| 6. | Naadi | Edakalai, Pingalai, Suzumunai | Three humours are found by these naadies. |
| 7. | Vayu | Piranan | Deranged vatham |
| | | Samanan | Vayu increased in jonts. |
| | | Devathathan | Drowsiness, tremor |
| | | Abanan | Constipation |
| | | Udanan | Salivation, dryness of mouth |
| | | Kirugaran | Salaivation, mental agony. |
| 8. | Kosam | Vali udambu | Deranged three humours and seven udal thathu, drowsiness, mental agony, weakness. |
| 9. | Aatharam | Moolaratham | Weakness |
| | | Swathitanam | Drowsiness |
| | | Manipooragam | Destroying |
| | | Anagatham | Burning sensation |
| | | Visuthi | Tremor |
| | | Aakinai | Dryness of mouth |
| 10. | Gunam | Thamo kunam | Drowsiness<br>Mental agony<br>Thamogunam is one of the main etiology. |
| 11. | Vinai | Thee vinai | Thivinai is one of the main etiology for the santhuvatham. |

**AFFECTED UYIR THATHUKAL**

**Table 3.6**

| | | | |
|---|---|---|---|
| 1. | Vatham | Piranan | Deranged vatham |
| | | Abanan | Constipation |
| | | Viyanan | Pain and numbness in joints |
| | | Samanan | Pain all over joints |
| | | Kirugaran | Salivation, mental agony |
| | | Devathatham | Drowsiness, ,mental agony |
| 2. | Pitham | Sathagam | Difficulty to work due to pain and numbness, mental agony, tremor weakness |
| 3. | Kapham | Santhigam | Destroying, loosening, inflammation, burning sensation in joints, chillness of joints,weakness, pinching of joints. |

**AFFECTED UDAL THATHIKAL**

**Table 3.7**

| **Affected udal thathukal** | **Symptoms** |
|---|---|
| Saaram | Salivation, dryness of mouth |
| Oon | Wasting, destroying, weakness |
| Kozhuppu | Destroying, chillness, inflammation, difficulty in movement of joints |
| Enbu | Burning sensation of joints, loosening, pain in allover the joints. |

**நோய் நிதானம் (DIFFERENTIAL DIAGNOSIS):**

**காளாஞ்சகவாதம் (Kalanjaga Vatham):**

Though the patient had numbness in both upper and lower limbs, twisting pain in joints destroying and inflammation, difficulty to walk, emaciation, cripple, rigidity due to morbid enlargement, wasting in body, pallorness, itching, ulcer, deranged iyyam, indigestion, drowsiness, it is not santhuvatham.

**வாதசுரோணிதம் (Vatha suronitham)**

Though the patient had Wasting in whole body, swelling in joints, difficulty to walking, swelling in carpal joints, itching in all over the body, loss of appetite, coma, salivation, it is not sathuvatham.

**உதிரவாதசுரோணிதம் (Uthiravatha Suronitham)**

Though the patient had, swelling in ankle joint, knee joint and heel pain and inflammation in carpal and tarsal joints, drowsiness, exhausted, madness, deranged Azhal humour, loss of appetite, it is not santhuvatham.

**மேகசூலை (Mega Soolai)**

Though the patient had pain in lower back and both limbs, constipation absolute suppression of urine, sweating in both limbs, shivering, redness in lips, wasting, burning sensation all over the body, fever, thirst, perplexity, mental delusion, it is not santhuvatham.

**வாதசூலை (VathaSoolai)**

Though the patient had, pain in both limbs, numbness, coma, pain in the body, chillness, pallorness in body and face,pain in the thigh, burning micturation, haematuria, pain increase in the body, it is not santhuvatham.

**பித்தசூலை (Pitha soolai)**

Though the patient had wasting and emaciation, pain in both limbs and joints, deranged humours, pallorness in all over the body, drowsiness and delusion, it is not santhuvatham

Santhuvadham is differentiated from other types of keel vaayu as follows:

**வளிஅழல் கீல்வாயு (Vali Azhal Keel Vaayu)**

It is characterized by excruciating pain and swelling involved in toes, knee joints, hip joints, elbow joints, shoulder joints and associated with systemic disturbances like dryness of mouth, pyrexia, headache, palpitation, constipationand sweating. In advanced cases it may affect the heart and produce “Thamaraga Vaayu”.

**ஐயகீல்வாயு (Iyakeel vaayu)**

It is characterized by severe pain in the joints associated with emaciation of the body, anorexia, insomnia, cough, hiccough, vomiting, anemia and dropsy. The common sites are spinal cord, hip joint and knee joint VALI IYAKEEL VAAYU:

It is characterized by pain in the joints associated with effusions of joint fluid and swelling, restricted joint movements, pyrexia, fainting, insomnia, especially in knee joint asymmetrically, lymphadenopathy, generalized malaise, atrophy of the affected limb etc., The affected joint looks like "Fox's head".

**LINE OF TREATMENT**

According to siddha system, the main aim of the treatment is to cure physical illness and mental illness.Treatment is not only for complete healing but also for the rejuvenation .Siddha system of medicine has a sophisticated treatment modality. It not only cures the disease but it corrects the causative factors and insists to advise certain life style modification in order to prevent the disease again.

Thiruvalluvar says about physicians duty, study the disease, study the cause, seek subsiding ways and do what is proper and effective.

'நோய்நாடி நோய்முதனாடி யதுதணிக்கும்
வாய்நாடி வாய்ப்பச் செயல்''
'உற்றானளவும் பிணியளவுங் காலமும்
கற்றான் கருதிச் செயல்'' - திருக்குறள்

So it is essential to know the disease, the aetiology, the nature of the patient, severity of the illness, the seasons and the time of occurrence must be observed clearly.

**Line of treatment is as follows:**

In Siddha system line of treatment consists of the following

1.Neekam (Treatment)

2. Niraivu (Restoration of wellbeing)

3. Kappu (Prevention)

**NEEKAM:**

a) To bring the Three Thodams to equilibrium state.

b) To treat the patient by Internal and external medicines.

c) To stabilize seven Udal thadhukal and three Uyir thadhukal.

To bring the three Thodams to normal equilibrium state-by giving purgation.

**Purgation drug:**

Purgation was given in early morning for balancing the deranged mukkutram on the first day of the treatment. Next day onwards the trial drugs .SANTHUVATHACHOORANAM (internally) and VATHA ENNAI (externally) were given.

**NIRAIVU:**

By promoting the awareness about the dietary, seasonal, emotional influence on the disease assurance from disease recovery was given. Life-style modification was also advised to them.

**KAAPU:**

It means prevention of human beings from disease. As per siddha system the vinaipayan (kanmam) is transferred to the fertilized embryos at the time of conception. This vinaipayan produces certain incurable chronic diseases. Moreover one should try to neutralize the vinai payan before his lifetime because, his negative effects are transferred to his hereditary.

One should simply eliminate the vinai payan through some simple life style modification or regulations. Further the physician must advise all the patient to follow the following habits.

- Living with good moral habits
- Avoid excessive sex with many persons
- Avoid stress, fear and anxiety
- Always follow good dietary pattern
- Avoid exposing chill weather and rain
- Take oil bath regularly
- Avoid intake of alcohols
- Avoid kabha producing foods
- Always do some simple yogas and medication
- Always have good positive thoughts

**DIETARY ADVICE:**

In Siddha system of medicine the importance of dietary habits have been emphasized for the management of diseases and its prevention in a effective manner.

“கடுகு நற்றிலத் தெண்ணெய் கூழ்பாண்டங்கள்
வடுவே தாயே தெண்ணெய் கூழ்பாண்டங்கள் கடலை
மடிவி லாதவெள்ளுள்ளிகொள் புகையிலை மதுபென்
இடறு பாகலோ டகத்தி நீக்கிடலிச் சாபத்தியம்”

- சித்த மருத்துவாங்க சுருக்கம்

During the course of treatment, the patients were advised to follow certain diet regimen (Icha pathiyam) which is mentioned for vatha diseases.

1. Kadugu - Brassica nigra (Mustard seed)
2. Ell Nei - Gingelly oil
3. Poosanikkai - Bennicasa hispida
4. Kadalai - Arachis hypogea
5. Thengai - Coccus nucifera
6. Maangai - Mangifera indica
7. Poondu - Allium sativum
8. Pala - Artocarpus heterophyllus
9. Kollu - Horse gram
10. Pugaiyilai - Nicotiana tobaccum
11. Pagal-- Momordica charantia
12. Agathi - Sesbania grandiflora
13. Sour taste
14. Astringent taste

**Substances used for neutralizing three humours are:**

“ஒன்றிய வாதபித்த கபமிவை யுயரா வண்ணம்
நன்றறு கறி களெல்லாம் நாளுமே சமைப்பராய்தோர்
தின்றிடு மிளகு மஞ்சள் சீரக முயர்ந்த காயம்
வென்றி கொள் சுக்கோடேலம் வெந்தியம் உள்ளி சேர்தே”

- ப.கு.சி

To maintain three vital humours in equilibrium one should take food cooked with:

| | | |
|---|---|---|
| Pepper | - | Piper nigram |
| Turmeric | - | Curcuma longa |
| Cumin seeds | - | Cuminum cyminum |
| Asafoetida | - | Ferula asafoetida |
| Dry ginger | - | Zingiber officinalel |

| | | |
|---|---|---|
| Cardamom | - | Elettaria cardamomum |
| Fenugreek | - | Trigonella foneum |
| Garlic | - | Allium sativum |

**Substances advised for vatha diseases are :**

"செங்கழுநீர் கோடைத் தேன் மிளகு நல்லெண்ணை
தங்கு பெருங்காயத் தழுதாழை - எங்கெங்கும்
கட்டு சிறு முத்து நெய் கோதில் உளுந்துவைகள்
வாட்டு மணிலக்கை மதி"

- ப.கு.சி

Honey collected during summer

| | | |
|---|---|---|
| Pepper | - | Piper nigram |
| Gingelly oil | - | Sesamum indicum |
| Asafoetida | - | Ferula asafoetida |
| Castor oil | - | Riccinus communis |
| Black gram | - | Vigna mungo |
| Garlic | - | Allium sativum |

**சேர்க்கக் கூடிய உணவுகள்: (Diet to be included)**

**காய்கள் (Vegetables):**

| | | |
|---|---|---|
| கத்தரிப்பிஞ்சு | - | Unripe brinjal |
| முருங்கைப் பிஞ்சு | - | Unripe drumstick |
| அவரைப்பிஞ்சு | - | Unripe broadbeans |

**கீரைகள் (Greens):**

| | | |
|---|---|---|
| பொன்னாங்கண்ணி | - | Alternanthera sessilis |
| மூக்கிரட்டை | - | Boerhaavia diffusa |
| தூதுவேளை | - | Solanum trilobatum |
| முருங்கைக்கீரை | - | Moringa oleifera |
| கறிவேப்பிலை | - | Murraya koenigii |
| முடக்கறுத்தான் | - | Cardiospermum halicacabum |
| அறுகீரை | - | Amaranthus tristis |
| கரிசாலை | - | Eclipta prostrate |

**பழங்கள் (Fruits):**

| | | |
|---|---|---|
| மாதுளை | - | Pomegranate |
| ஆப்பிள் | - | Apple |

| | | |
|---|---|---|
| பப்பாளி | - | Papaya |
| ஆரஞ்சு | - | Orange |
| பேரீச்சை | - | Dates |
| அத்தி | - | Figs |
| நாவல் | - | Syzygium cumini |

**அசைவம் (Non-Vegetarian diet):**

| | | |
|---|---|---|
| வெள்ளாட்டுக்கறி | - | Meat |
| காடை | - | Quail |
| சிறு இறால் மீன் | - | Prawn |

## FOEMENTATION

**Definition**

A fomentation consists of a local application of moist heat to the body surface. A fomentation is usually made of blanket material. 50% wool to retain heat and 50% cotton to retain moisture and be more durable.

**Physiologic effect**

1. Promotes increase in circulating white blood cells.
2. Increases blood flow to the skin, thereby relieving internal congestion.
3. Relieves muscle spasm by increasing circulation and releasing muscle tension.
4. Relieves pain in muscles and joints by counter-irritation and de congestion.
5. Reflexly relieves pain from internal organs.
6. Increases elimination by promoting sweating
7. Stimulates or sedates according to the temperature of the application.

**Indications**

1. Joint pain
2. Neuralgia and Neuritis pain
3. Muscle tension
4. Insomnia
5. To warm the tissues in preparation for massage.
6. To prepare for cold procedures.

**Contra indications and cautions**

1. Loss of skin sensation due to unconsciousness paralysis of the part legs and feet of diabetic
2. Leg or feet oedema, varicose veins, advanced vascular disease.
3. Malignancy
4. Tendency to bleed (haemorrhage)
5. Stomach or bowel ulcers.
6. Omit cold in extreme pain such as pleurisy, Renal colic and dysmenorrhoea.

**ஒற்றடம் (Fomentation)**

மருந்து பொருட்களை வறுத்து துணியில் முடிந்து நோயுள்ள இடங்களில் ஒற்றுதல்.

It is also one of the 32 external theraphies of siddha medicine by application of hot medicated packs.

The medicated pouches are made up of leaves that contains.

- Pelonex elata (வாத நாராயணன் இலை)
- Tamarindus indicus (புளியிலை)
- Vitex negundo (நொச்சி)
- Cleodendrum phlomoidis (தழுதாழை)

**Uses**

Increases blood circulation and reduces pain.

# MODERN ASPECT

**JOINT**

A joint or articulation is the connection made between bones in the body which link the skeletal system.

**CLASSIFICATION OF JOINTS**

1. **Clinical, numerical classification**

   Monoarticular – Concerning one joint

   Oligorticular or pauciarticular – concerning two to four joints

   Polyarthritis – concerning five or more joints

2. **Structural classification:**

   Fibrous joint – joined by dense regular connective tissue that is rich in collagen fibers

   Cartilaginous joint – joint by cartilage

Synovial joint – not directly joined- the bones have synovial cavity and are united by the dense irregular connective tissue that forms the articular capsule that is normally associated with accessory ligaments.

Facet joint – joint between two articular processes between two vertebrae.

**3.Functional classification**:

Synarthrosis – permits little or no mobility. Most synarthrosis joints are fibrous joints. They are classified according to the type of tissue found between the articulating bones.

Sutures – found between the membrane bones.

Synchondrosis – found between cartilaginous bones

**Synostosis:**

Structure or synchondrosisossify,the joint disappears.

Amphiarthrosis – permits slight mobility. Most amphiarthrosis joints are cartilaginous joints ( e.g.invertebral discs).

Synovial joint ( also known as diarthrosis) – freely movable. Synovial joint can in turn be classified into six groups according to the type of movement they allow. They are:

- ✓ Plane joint
- ✓ Ball and socket joint
- ✓ Hinge joint

- ✓ Pivot joint
- ✓ Saddle joint
- ✓ Condyloid joint

**4.Axial classification:**

- ✓ Uniaxial
- ✓ Biaxial
- ✓ Multiaxial

**5.Biomechanical classification:**

- ✓ Simple joint- two articulation surfaces( e.g. shoulder joint, hip joint)
- ✓ Compound joint – three or more articulation surfaces (e.g. radiocarpel joint)
- ✓ Complex joint – two or more articulation surfaces and an articular disc or meniscus ( e.g. knee joint)

**6.Anotomical Classification:**

- ✓ Joints of hand
- ✓ Elbow joints
- ✓ Wrist joint
- ✓ Axillary articulations
- ✓ Sternoclavicular joints
- ✓ Vertebral articulations
- ✓ Temporomandibular joints
- ✓ Sacroiliac joints
- ✓ Hip joints
- ✓ Knee joints
- ✓ Articulations of foot

**CARTILAGINOUS JOINT**

Cartilaginous joints are connected entirely by cartilage (fibrocartilage or hyline). They are classified into the following types:

- ✓ Primary cartilaginous joint
- ✓ Secondary cartilaginous joint

**BURSAE**

This is a sac of synovial membrane surrounded by fibrous tissue. They facilitate movements. They may be continuous with the joint cavity. (e.g.) supra patellar bursa of knee joint.

**ARTICULAR DISC**

In some joints there may be fibro cartilaginous pads. They divide the joint cavity into two components.Eg:

- ✓ Sternoclavicular joint
- ✓ Temporo mandibular joint
- ✓ Knee joint

**SYNOVIAL MEMBRANE**

Synovial membrane lines non- articular areas in synovial joints, bursae and tendon sheaths, all regions where movement occurs between opposed surfaces, which are lubricated by a fluid superficially like egg albumin (synovia) secreted and absorbed by the membrane. It lines fibrous capsules and covers exposed osseous surfaces, intra capsular ligaments and tendons.

**SYNOVIAL FLUID**

Synovial fluid is a clear, viscous, pale, yellow, fluid, with a specific gravity of 1.008 to 1.015, which fills the synovial cavity. It is a dialysate of the blood plasma with mucin and hyaluronic acid added t it as secretions from the synovial cells.

Analysis of the synovial fluid is helpful in diagnosing various types of arthritis by changes in its viscosity, cell content and biochemical features. Approximate amount and ranges ofsubstances in synovialfluid.

**FUNCTIONS:**

1. The main function of synovial fluid are lubrication and nourishment of the articular cartilage.
2. Synovial fluid includes provision of a liquid environment, small in range of pH, for joint surface nutrition of articular cartilage, disc and menisci lubrication and reduction of erosion.
3. Synovial membrane not only produces fluid but also removes materials from the articular cavities.

**THE SYNOVIAL CAVITIES**

The joint cavities and the bursae are known as synovial cavities. The synovial membrane at all, but only a collection of dense fibrous tissue cells that lines the surface between the interstitial spaces and cavities. For this reason these cavities might be considered to be nothing more than enlarged tissue spaces. However the synovial cavities do contain amounts of mucopolysaccharides much than normally

present in the interstitial fluid. The origin is not known through presumably it is secreted by the surrounding connective tissue cells.

In the synovial cavities, excess proteins are likely to collect in the potential spaces and these must be returned to the circulatory system through the lymphatics, otherwise the space swells. Since the synovial membrane offers little or no barrier to the transfer of fluid into the surrounding tissues, the protein can flow into the lymphatics of the area.

**Classification:**

Joints are subject to various types of disease and disorders. Disease of joint can be classified as follow

**1.Infective arthritis**

Bacterial,viral and parasitic:

a) Acute infection

Acute pyogenic arthritis

Acute gonococcal arthritis

Acute rheumatic arthritis

Small pox arthritis

b) Chronic infections

Nonspecific : pyogenic arthritis

Specific : tuberculous arthritis

Syphilitic arthritis

Gonococcal arthritis

Parasitic : guinea worm arthritis

**2. Rheumatoid arthropathy**

a) RHEUMATOID ARTHRITIS

Rheumatoid Arthritis (Adult)

Juvenile Rheumatoid Arthritis(JRA)

b) SERO NEGATIVE SPONDYLO ARTHROPATHY:

Ankylosing spondylitis

Reiter's Disease

Psoriatic arthritis

Enteropathic Arthritis

**3. Degenerative arthritis**

Osteoarthritis

1. Primary Osteoarthritis

2. Secondary Osteoarthritis

**4. Neuropathic arthropathy**

Tables – charcot'sArthropathy

Syringomyelia

Leprosy

Diabetes Mellitus

**5.Metabolic arthritis**

Gout

Alkaptonuric Arthritis

**6.Arthritis in systemic disorder**

Allergic arthritis

Haemophilic Arthritis

**7. Miscellaneous joint**

Villo – Nodular synovitis

Synovial Chondromatosis

**8. Hysterical joint**

**ARTHRITIS**

Arthritis is one of the most common joint diseases in India. It owes its causes various kinds of prevelling.. Depending on the total number of joints involved, arthritis can be divided into monoarthritis(one joint),oligoarthritis(2 to 4 joints),and polyarthritis (5 or more joints).polyarthritis can be symmetrical or asymmetrical .

**PATHOLOGGY**

Arthritis is an inflammation of one or more joints with involvement of the synovium, articular surfaces and capsule. The following stages can be identified:

- Synovitis
- Reversible arthritis
- Irreversible arthritis
- Ankylosis

The cartilage stage of the disease is the involvement and destruction of the articular cartilage, as any gross damage to the cartilage is irreversible, leading to ankylosis and loss of function.

**POLYARTHRITIS**

Polyarthritis is involvement of five or more joint groups. In determining the cause it is helpful to consider whether the polyarthritis:

Symmentrical or as asymmentrical

- Shows predominant or equal involvement for upper and lower limbs.
- Shows predominant or equal involvement for large and small joints.
- Has accompanying particular involvement.
- Has accompanying extra- articular features as clue to the diagnosis.
- A defective diagnosis may be difficult in the first few months of onset but often becomes firmer as more characteristic features develop with time. However , certain patterns are characteristics and may be present at or soon after presentation.

**EXAMPLES OF EXTRA ARTICULAR FEATURES THAT ASSOCIATE WITH INFLAMMATORY OLIGO OR POLY ARTHRITIS**:

**Table 3.7**

| **Clinical features** | **Disease association** |
|---|---|
| Skin, nails and mucus membranes | Psoriatic arthritis |
| Psoriasis, nail pitting and dystrophy | Scleroderma, lupus |
| Raynaud's phenomenon | Lupus |
| Photo sensitivity | Lupus |
| Liver Reticularis | Vasculites |
| Splinter haemorhages, nail fold infracts. | Lupus, reactive arthritis, Behcet's |
| Oral ulcers | |
| Large nodules (mainly extensor surfaces) | Rhematoid arthritis, gout, |
| Clubbing | EnteropathicArhritis, metastatic lung cancer, endocardiis. |
| **Eye** | |
| Uveitis | Seronegativespondyloathritis |
| Conjunctivitis | Reactive arthritis |
| Episcleritis, scleritis | Rheumatoid arthritis |
| Urethritis | Reactive arthritis |
| **Heart, Lungs** | |
| Pleuro – pericarditis | Lupus, rheumatoid arthritis |
| Fibrosingalveolitis | Rheuatiod arthritis, lupus, other Connective tissue disease. |
| **Abdominal organs** | |
| Hepato splenomegaly | Rheumatoid arthritis, lupus |
| Haematuria,proteinuria | Lupus, vasculitis, scleroderma |
| Urethritis | Reactive arthritis |
| **Severe lymphadenopathy** | Infection, systemic juvenile idiopathic Arthritis. |

A large number of viral infections may cause arthralgia ( Joint pain with no abnormal examination findings) and rapid onset of an acute symmetrical inflammatory ply arthritis affecting small and large joints of upper and lower limbs that is usually self limiting within six weeks.

- These include parvovirus, hepatitis B and C, mumps, rubella, chickenpox and infection mononucleosis.
- The rapidity of onset, the presence of fever and the characteristic rash usually suggest the diagnosis.
- Arthritis usually precedes jaundice from hepatitis B.
- Rubella arthritis mainly affects girls and women, occurring 1-7days after the rash or 2-6 weeks after vaccination.
- Rubella is exceptional in that, although the symmetrical poly arthritis settles, oligo Arthritis may persist for some months.
- Poly arthritis that persists for more than 6 weeks is unlikely to be viral.
- A definitive diagnosis may be difficult in the first few month of onset but often becomes firmer as more characteristic features develop with time. However, certain patterns are characteristic and may be present at or soon after presentation.
- Rheumatoid arthritis is the most common cause of chronic inflammatory, symmetrical poly arthritis affecting small and large joints for upper and lower limbs.
- Tenosynovitis and bursitis are the main periarticular manifestation.
- Marked asymmetry, lower limb predominance and involvement of large more than small joint are all more characteristic of sero negative spondylo arthritis. Concurrence spondylitis may be further clinical marker of spondyloarthritis.
- Lupus usually causes more arthralgia and wrist extensor tenosynovitis than over synovitis.
- Chronic poly arthritis due to gout is inevitably preceded by a long history of acute attacks.
- Other causes of poly arthritis are rare.
- For inflammatory poly arthritis present for less than 6 weeks.
- The full blood count
- Liver function tests
- Viral serology is often appropriate

- For early persistant poly arthritis of indeterminate cause appropriate initial investigation should include the full blood count.
- ESR
- CRP
- Rheumatoid Factor
- Antinuclear antibody
- Radiographs of hand and feet

**CAUSES OF POLYARTHRITIS**

**Table 3.8**

| Causes | Characteristics |
|---|---|
| **Non inflammatory** | |
| Generalized osteoarthritis | Very common, symmetrical, small and large joints, heberden'snodes, only a few joints symptomatic at any one time. |
| Haemochromatosis | Rare , small and large joints |
| Acromegalicarthropathy | Rare , mainly large joints, spine |
| **Inflammatory** | |
| Viral arthritis | Very acute, self limiting |
| Rhematoid arthritis | Symmetrical, small and large joints upper and lower limbs. |
| Seronegativespondarthritis | Asymmetrical, large> small joints lower>uperlimbs, spondylitis |
| Psoriasis | Symmetrical,small> large jonts, joint damage uncommon. |
| Reactive | Distal> proximal joints, preceded by acute attacks. |
| Ankylosing spondylitis | Symmetrical, small and large joints, upper and lower limbs. |
| Enteropathicarthropathy | Symmetrical, smalland large joints. |
| Lupus | Rare, small and large joints |
| Chronic gout, juvenile idiopathic arthritis, chronic sarcoidosis, scleroderma&Polymyositis, hypertrophic osteoarthropathy | Rare, large> small joints, clubbing. |

## OSTEOARTHRITIS

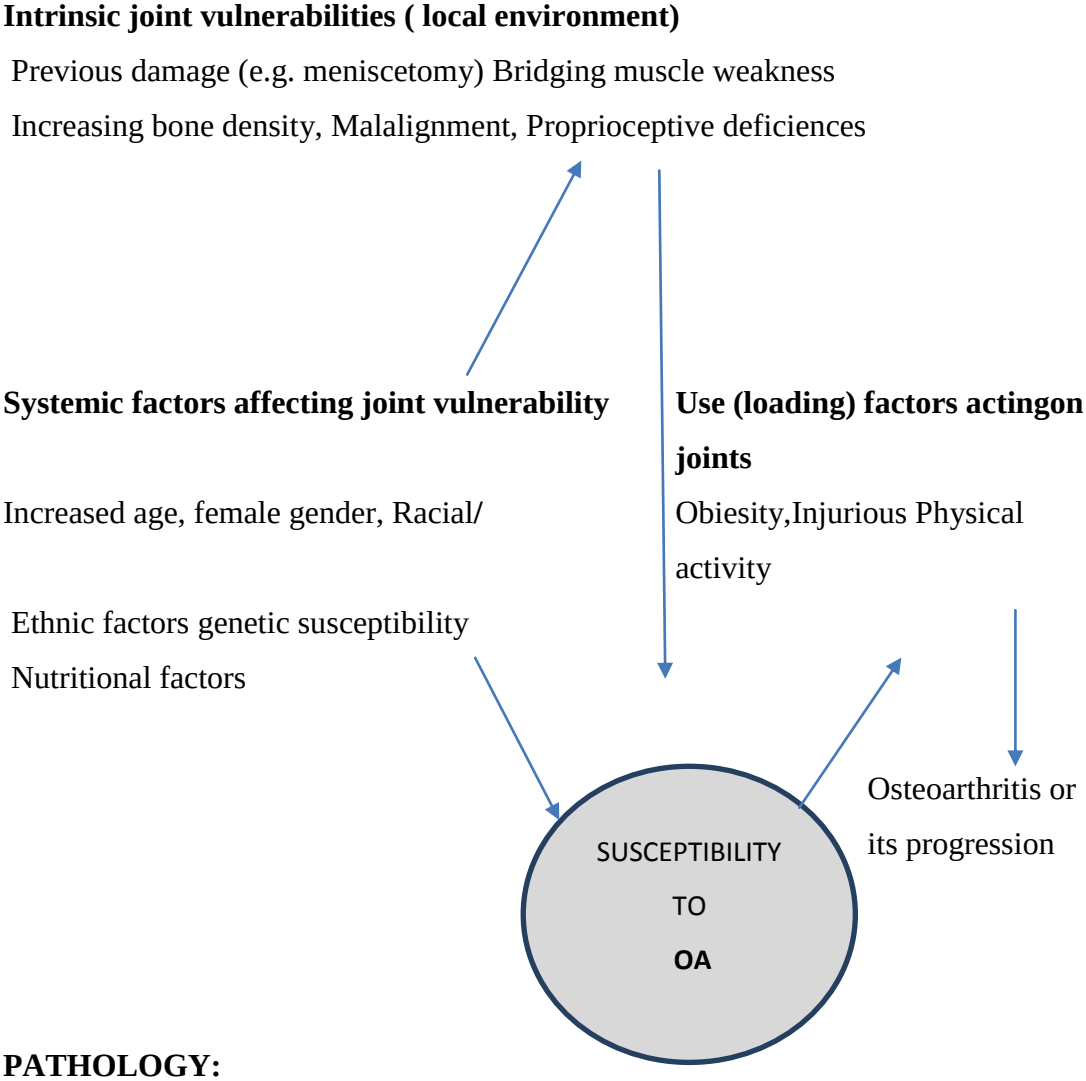
Osteoarthritis (OA) is the most common type of arthritis. Its high prevalence, especially in the elderly, and the high rate of disability related to disease make It a leading cause of disability in the elderly. Commonly affected joints are LS spine, hip, knee and MTP.

### Definition

OA is joint failure, a disease in which all structures of the joint have undergone pathologic change, often in concert. The pathologic sine qua non of disease is hyaline articular cartilage loss, present in a focal and, initially, nonuniform manner. This is accompanied by increasing thickness and sclerosis of the subchondral bony plate, by outgrowth of osteophytes at the joint margin, by stretching of the articular capsule, by mild synovitis in many affected joints, and by weakness of muscles bridging the joint. In knees, meniscal degeneration is part of the disease. There are numerous pathways that lead to joint failure, but the initial step is often joint injury in the setting of a failure of protective mechamisms.

**RISK FACTORS**

**Figure 3.1**




**PATHOLOGY:**

The pathology of OA provides evidence of the involvement of many joint structures in disease. Cartilage initially shows surface fibrillation and irregularity. As disease progresses, focal erosions develop there, and these eventually extend down to the subjacent bone. With further progression, cartilage erosion down to bone expands to involve a large proportion of the joint surface, even though OA remains a focal disease with nonuniform loss of cartilage.

After an injury to cartilage, chondrocytes undergo mitosis and clustering. This is because the catabolic activity is greater than the synthetic activity. Collagen matrix become damaged, the negative charges of proteoglycans get exposed, and cartilage swells from ionic attraction to water molecules. Due to this damaged cartilage proteoglycans are no longer forced into close proximity, cartilage does not bounce back after loading as it did when healthy and cartilage becomes vulnerable to further

injury. Stimulate by growth factors and cytokines, osteoblasts in the subchondral bony plate, just underneath cartilage, become activated. Bone formation produces a thickening and stiffness of the subchondral plate that occurs even before cartilage ulcerataes.

At the margin of the join, near areas of cartilage loss, osteophytes form. These are an important radiographic hallmark of OA. The synovium produces lubricating fluids that minimize shear stress during motion. In healthy cases the synovium consists of fat and two types of cells, marcrophages and fibroblasts, but in OA it can sometimes become edematous and inflamed. There is a migration of macrophages from the periphery into the tissue, and cells lining the synovium proliferate. Additional pathologic changes occur in the capsule, which stretches, becomes edematous and can become fibrotic.

Basic calcium phosphate and calcium pyrophosphate dehydrate crystals are present microscopically in most joints with end stage OA. Their role in osteoarthritic cartilage is unclear, but their release from cartilage into the joint space and joint fluid likely triggers synovial inflammation, which can in turn produce release of enzymes and trigger nociceptive stimulation.

**CLINICAL FEATURES**

- Joint pain from OA is activity related. Pain comes on either during or just after joint use and then gradually resolves.
- Early in disease, pain is episodic, triggered often by a day or two of overactive use of a diseases joint.
- Stiffness of the affected joint may be prominent, but morning stiffness is usually brief (<30).
- In knee, bulking may occur, in part due to weakness of muscles crossing the joint.
- Mechanical symptoms such as bulking, catching or locking, could also signify internal derangements.
- In knees pain with activities requiring knee flexion.
- Bursitis occurs commonly around knees and hips.
- OA can be detected by loss of internal rotation on passive movement and pain isolated to an area lateral to the hip joint usually reflects the presence of trochanteric.
- Examination of synovial fluid is often more helpful diagnostically han x-ray.

## RHEUMATOID ARTHRITIS

Rheumatoid arthritis (RA) is a chronic, multisystem disease affecting the connective tissue of the whole body with focal involvement of the musculoskeletal system. It causes inflammatory synovitis of peripheral joints, leading to cartilage damage, bone errosions and subsequent joint deformity.

### Aetiology

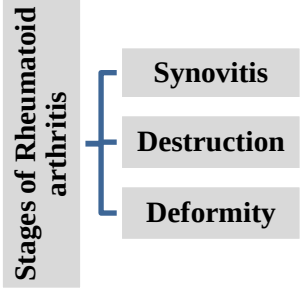
Aetiology remains unknown.

- Genetic predisposition
- Abnormal immune response

### Pathology

Rhematoid disease in considered to be an autoimmune response to an unknown antigen. The antibody formed is the rheumatoid factor which is identified as IgM or IgG. Rheumatoid factor may also be present in other conditions such as SLE, Sjorgen syndrome, Sarcoidosis and tuberculosis. Other autoantibodies found in RA are antibodies to antifilaggrin and anticitrullinated proteins. There is inflammation of the synovial membrane, which becomes oedematous and thickened with inflammatory exudates. Chronic persistent synovitis is a characteristic features of RA. Microscopic examination reveals lymphoid follicle forming nodules with scattered cells. The articular tissue gets lysed from the surface. A similar lytic process occurs on the deeper surface of the articular cartilage from the granulating lesion in the subchondral bone. The inflammatory process spreads into the capsule and the periarticular tissue. During the healing process, the granular pannus becomes fibrous, uniting the joint surface and causing fibrous ankylosis. The muscles around the jt also undergo inflammatory changes in the collagen tissue and get atrophied. Rheumatoid nodules which are palpated over bony prominineces consist of a central necrotic zone surrounded by radially dispersed palisade of local histocyes.

**Figure 3.2**



**Clinical features**

RA is more common in women and occurs between 25 and 40 years of age. It is a chronic disease with typically present as symmetric, peripheral, polyarticular disease with a gradual onset. Morning stiffness is very characteristic of RA. RA usually involves the small jts of the hands and feet and later spreads to the proximal jts such as the knee, hips, elbow and shoulder.

Joints involved in rheumatoid arthritis

- Commonly involved joints
- Small joints of hand, especially MCP and PIP and never DIP joints.
- Foot especially matatorsophalangeal
- Wrist
- Knee and elbow
- Ankle
- Less common involved joints
- Hip
- TM joint
- Subtalar joint of foot
- Rarely involved
- Upper cervical spine, i.e, interspinous facet jts, atlantoaxial joint
- Lumbar spine
- DIP joint of hand

**DEFORMITIES IN RA**

**Figure 3.9**

| **Joints involved** | **Deformity** |
|---|---|
| Joints of hand | Ulnar drift<br>Intrinsic plus deformity<br>Boutonniere deformity<br>Swan neck deformity |
| Elbow | Flexion deformity |
| Knee | Early: Flexion deformity<br>Late: Triple subluxation |
| Ankle | Equinus deformity |
| Joints of foot | Hallux valgus<br>Hammer toe<br>Claw toes<br>Callosities |

## DIAGNOSIS

The picture of bilateral symmetric inflammatory polyarthritis involving small and large joints in both the upper and lower extremities suggest the diagnosis.

**Criteria for the diagnosis of rheumatoid arthritis**.

- Mornig stiffness > 1hr
- Arthritis of 3 or more joints
- Arthritis of hand joints
- Symmetric arthritis
- Rheumatoid nodules
- Rheumatoid factor
- Radiological changes

## RADIOLOGICAL FEATURES IN RHEUMATOID ARTHRITIS

Early changes

- Soft tissue shadows resulting from swelling
- Narrowing of joint space
- Bony erosion
- Juxta-articular osteopenia

Later changes

- Joint dislocation
- Deformity of joints
- Subluxation or dislocation of joints
- Subchondral cystic areas

## SERONEGATIVE SPONDYLOARTHROPATHY

Seronegativespondyloarthropathy includes the following rheumatoid like conditions where the serum is negative for the rheumatoid factor.

- Ankylosing spondylitis
- Reiter disease
- Psoriatic arthritis
- Enteropathicarthropathy

## ANKYLOSING SPONDYLITIS

AS is an inflammatory disorder of unknown cause that primarily affects the axial skeleton, peripheral joints and extraarticular structures are also frequently involved. The disease usually begins in the second or third decade.

**Clinical manifestations**

The symptoms of the disease are usually first noticed in late early adulthood. The initial symptoms is usually dull pain, insidious in onset, felt deep in the lower lumbar or gluteal region, accompanied by low back morning stiffness of up to a few hours duration that improves with activity and returns following inactivity. Within a few months the pain has usually become persistent and bilateral. Nocturnal exacerbation of pain often forces the patient to rise and above around. Bony tenderness may accompany back pain or stiffness. Common sites include the costosternal junctions, spinous process, iliac crests, greater trochanters, ischialtuberosities, tibial tubercles and heels. Arthritis in the hips and shoulders occurs in 25-35% of patients. Severe isolated hip arthritis or bony chest pain may be the presenting complaint. Neck pain and stiffness from involvement of the cervical spine are usually relatively late manifestations but are occasionally dominat symptoms.

The most specific findings involve loss of spinal mobility, with limitation of anterior and lateral flexion and extension of the lumbar spine and of chest expansion. Limitation of motion is usually out of proportion to the degree of bony ankylosis, reflecting muscle spasm secondary to pain and inflammation. Pain in the sarcoilliac joints may be elicited either with direct pressure or with stress on the joints. Inaddition there is commonly tenderness upon palpation at the sites of symptomatic bony tenderness and paraspinous muscle spasm.

**REITER DISEASE**

It is characterized by a traid of polyarthritis, urethritis and conjuctivities. It is an aseptic inflammatory arthritis associated with non specific complaints and at times bowel infection. The joint condition is acute polyarthritis resembling RA. It does not cause destructive changes in the joint structures. Knee and ankle joints are commonly involved. The urethritis is non gnococcal, but the exact organism is not known.

**PSORIATIC ARTHRITIS**

Psoriatic arthritis refers to an inflammatory arthritis that characteristically occurs in individual with psoriasis.

**Clinical features**

In 60-70% of cases, psoriasis precedes joint disease. In about 15-20% of cases, the arthritis precedes the onset of psoriasis and can present a diagnostic challenge. Nail changes in the fingers or toes occur in 90% of patients with PsA, compared with 40% of psoriatic patients without arthritis and pustular psoriasis is said to be

associated with more severe arthritis. Dactylitis occurs in >30% ,enthesitis and tenosynovitis are also common. Shortening of digits because of underlying osteolysis is particularly characteristic of PsA. Rapid ankylosis of one or more proximal interphalangeal (PIP) joints early in the course of disease is not uncommon. Back and neck pain and stiffness are also common.

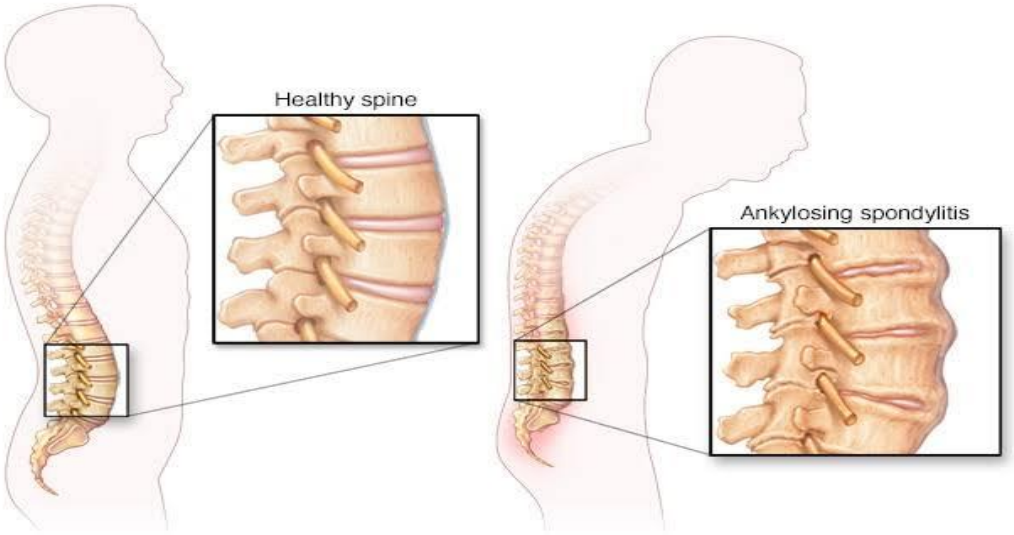
**ENTEROPATHIC ARTHROPATHY**

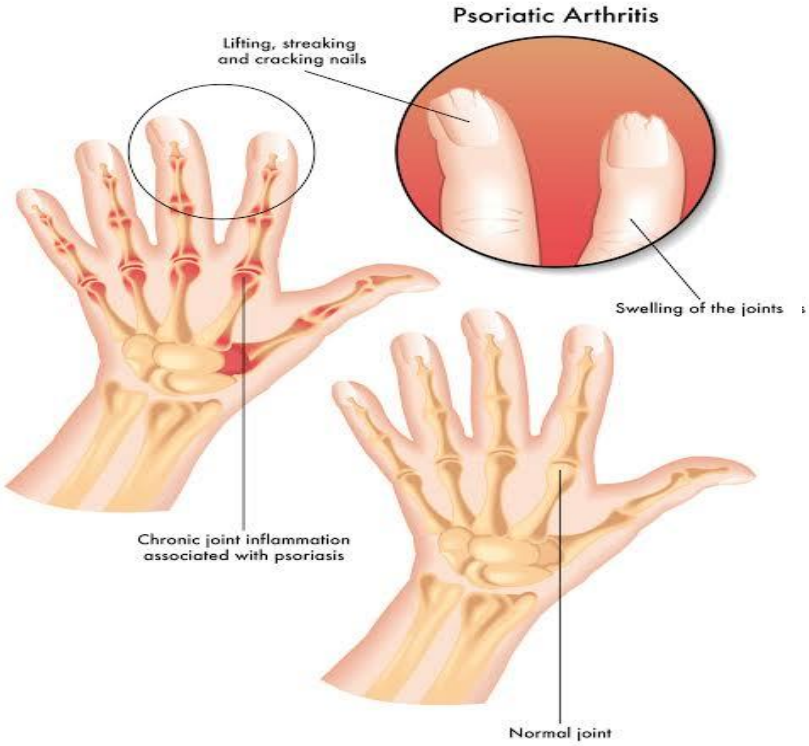
Chronic inflammation bowel diseases such as regional enteritis and ulcerative colitis are associated with arthriti lesions in about 10% cases. There is peripheral polyarthritis or involvement of the spine. The joint conditions shows remissions and exacerbations along with the activity of the underlying bowel disease. The joint disease usually resolves with the treatment of the bowel disease.

**REACTIVE ARTHRITIS**

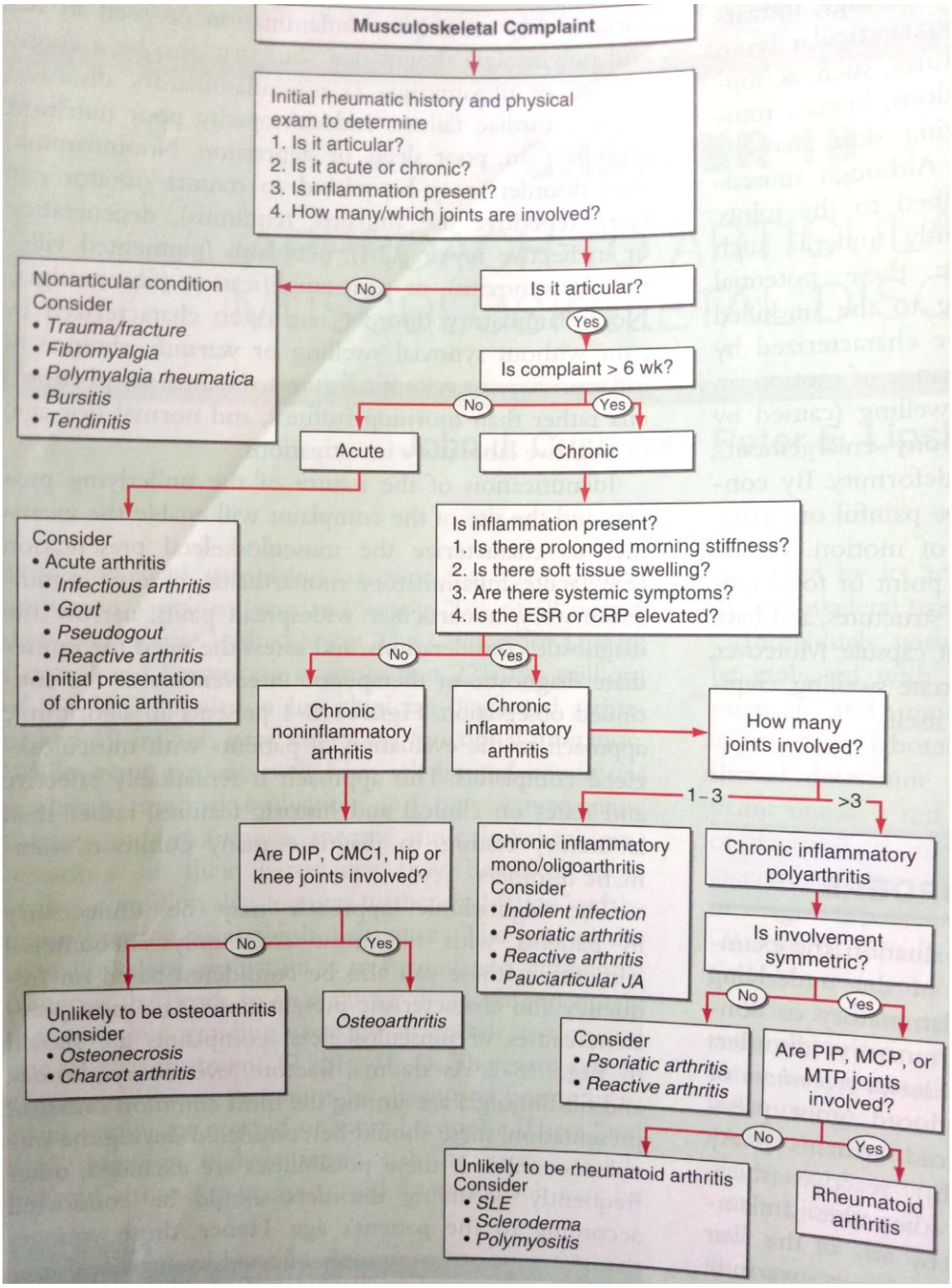
ReA refers to acute nonpurulent arthritis complicating an infection elsewhere in the body. Constitutional symptoms are common, including fatigue, malaise, fever and weight loss. Arthritis is usually asymmetric and addictive with involvement of new joints occurring over a few days 1-2weeks. The joints of lower extremities are most commonly involved, but the wrist and fingers can be involved as well. The arthritis is usually quite painful, and tense joint effusions are not uncommon, especially in knee. Patiemts often cannot walk without support.

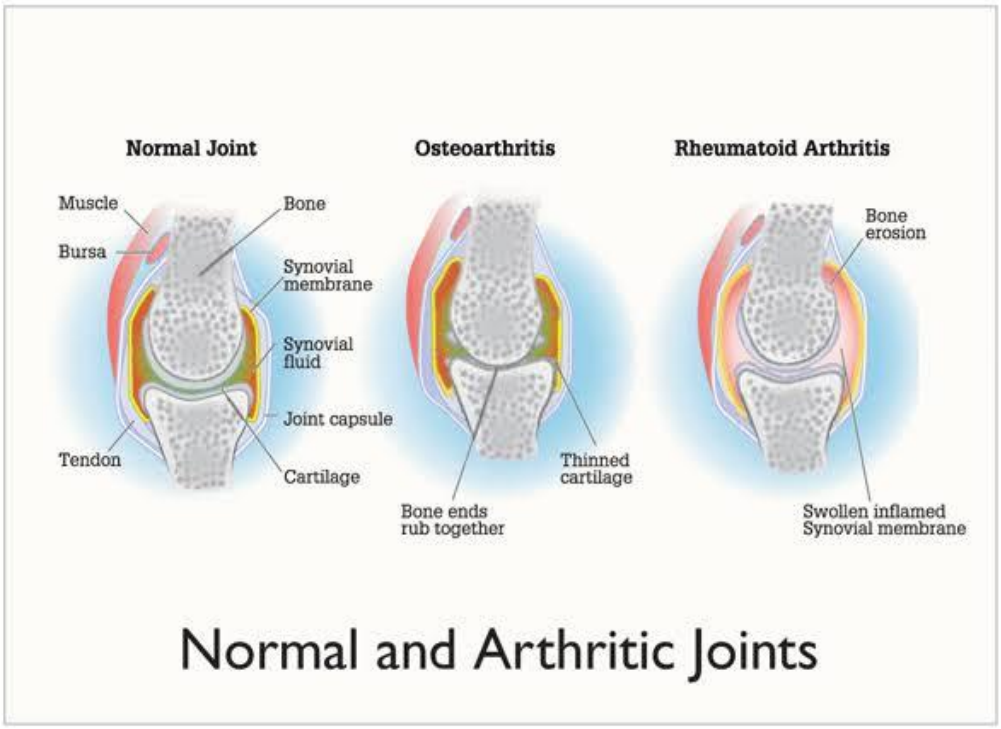
Spinal and low back pain are common and may be caused by insertional inflammation, muscle spasm, acute sacroilitis or presumably, arthritis in intervertebral joints. Ocular disease is common. Mucocutaneouslesion are frequent.

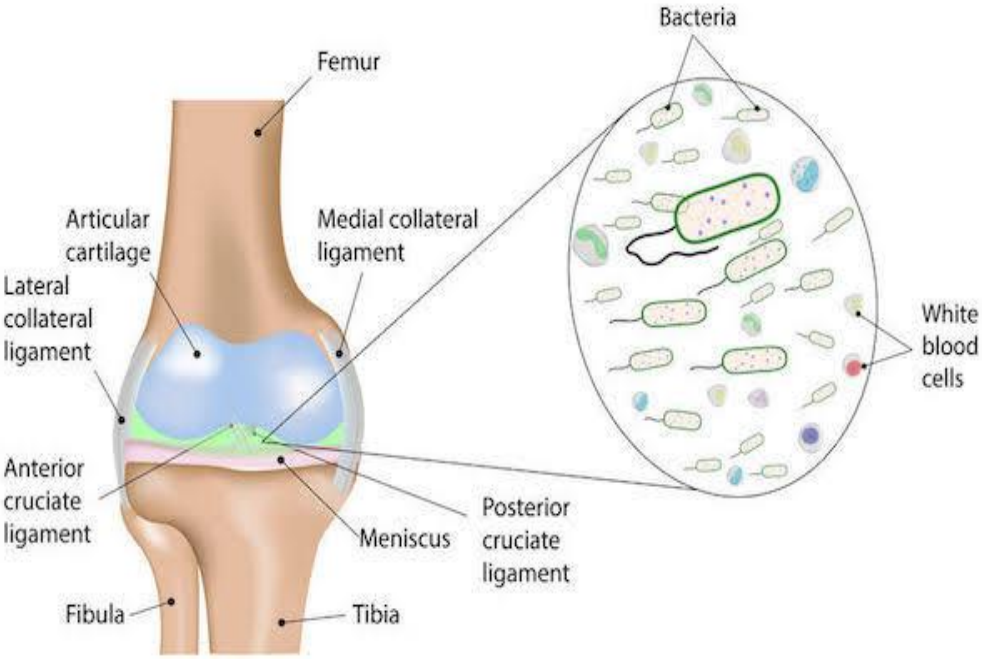

Healthy spine
Ankylosing spondylitis


Psoriatic Arthritis
Lifting, streaking and cracking nails
Swelling of the joints
Chronic joint inflammation associated with psoriasis
Normal joint

## DIAGNOSIS OF ARTHRITIS






# Septic Arthritis

## MATERIALS AND METHOD

Clinical study on Santhuvatham was carried out in the Post graduate SirappuMaruthuvam department of Government Siddha Medical College, Palayamkottai. In this study 40 patients (who satisfy the inclusion criteria and exclusion criteria) were treated as OP and IP patients. The clinical trial was duely approved by the Institutional Ethics Committee (IEC), Government Siddha Medical College, Palayamkottai.

**SAMPLE SIZE :**

40 patients ( OPD& IPD)

**STUDY DESIGN & CONDUCT OF STUDY:**

| | | |
|---|---|---|
| Study type | : | prospective open labelled phase II clinical criteria based study . |
| Study Place | : | OPD & IPD of Government Siddha medical College & hospital, Palayamkottai. |
| Study Period | : | 24 Months |
| Sample Size | : | 40 Patients ( OPD& IPD). |

**PRIMARY STUDY END POINTS:**

The primary endpoints to be measured in this study include

- X-rays will be taken once in two weeks and assessed for improvement.
- Urine and blood samples will be collected once in two weeks and analyzed.
- The prognosis of inflammation will be measured by a measuring tape,twice in a week.
- Number of visit to the OPD will be noted.patient will be asked to come to OPD weekly thrice. (Monday, Wednesday &Friday) for 6 weeks.

**SECONDARY STUDY END POINTS:**

The secondary endpoint to be measured is evaluated relief in symptoms in subjects under study 3 times at weeks.

**PRIMARY SAFETY END POINTS:**

The primary safety endpoint will be measured and collection of any serious adverse event that occurs from initial study treatment through and including 30 days after cessation of study treatment.

**INCLUSION CRITERIA:**

- Age : between 20- 70 years
- Sex : Both male and female
- Joints pain : more than 5 joints
- Swelling
- Stiffness
- Restricted movements in affected joint.
- Willing for admission and study in IPD for 30-40 days or willing to attend OPD

**EXCLUSION CRITERIA:**

- Rheumatic Fever
- Rheumatoid arthritis
- Other systemic illness
- Gout
- Recent Fracture
- Recent Dislocation of joints
- Malignancy
- Use of narcotic drugs
- Pregnancy and Lactation
- Tuberculosis

**WITHDRAWAL CRITERIA:**

- Intolerance to the drug and development of adverse reactions during drug trial.
- Poor patient's compliance and defaulters.
- Patient turned unwilling to continue in the course of clinical trial.
- Occurrence of any serious illness.

**TESTS AND ASSESMENTS:**

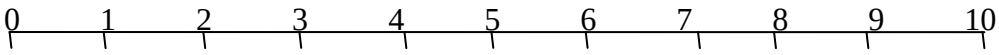
- Clinical assessment
- Routine investigations
- Specific investigations
- Radiological investigations
- Siddha investigations

**CLINICAL ASSESSMENT:**

- Pain in more than five joints
- Tenderness, Numbness
- Stiffness
- Restriction of movements of affected joints
- Effect of treatment will be evaluated on the basis of changes in the signs and symptoms after the treatment.

**PAIN ASSESSMENT**

**UNIVERSAL PAIN ASSESSMENT SCALE**




A.0 : No Pain

B. 1-3 : Mild pain

C.4-6 : Moderate pain

D.7-10 : Severe pain

**Reference:** Clinical Manual for Nursing Practice. (National Institute of Heatlth Warren Grant Magnuson Clinical center

**GRADATION:**

**Grade 1:** Fit for all activities to do their work without support (Normal)

**Grade 2:** Mild Pain and Mild restriction of Movements

**Grade 3:** Moderate Pain and Moderate restriction of Movements

**Grade 4:** Severe Pain and Severe restriction of Movement

**Investigations**

The symptoms of santhuvatham were more or less correlated with polyarthritic conditions of (Rheumatological and collagen diseases) in modern medicine. So investigations meant for such diseases were done for santhuvatham. Some of these are routine blood tests, urine tests, stool examination and specific tests such as rheumatoid arthritis factor, radiographic evaluation etc. Besides this blood sugar, blood urea, serum cholesterol were also investigated. The diagnosis was made by following Siddha diagnostic methods. Nilam, Kalam, Poriyalaridhal, Pulanalarithal, Vinaadhal, MukkutraNilaigal ,UdalThathukal and EnvagaiThervugal, and the diagnosis of Santhuvatham were obtained which correlated with modern diagnosis of Polyarthritis by the X-Ray findings.

**INVESTIGATION:**

The following investigations were done in all selected patients in the laboratory of Government Siddha Medical College, Palayamkottai.

**BLOOD:**

TC (Cells/cu mm)

DC P L E M N

ESR ½ hr 1hr

Hb g%

**Blood Sugar:**

Fasting

Post prandial

**Renal function tests:**

Blood urea

Blood uric acid

Serum creatinine

**Serology:**

C-reactive protein

RA factor

ASO titre

**Urine examination:**

Albumin

Sugar

Deposits.

**RADIOLOGICAL INVESTIGATIONS:**

X-Ray of affected jonts (AP and Lateral view).

**TREATMENT :**

Vellaiennai 15ml at morning with hot water was given on the first day of treatment.

**INTERNAL:**

Drug: Kodivelichooranam

**REFERENCE:**

Yugivaithiyakaviyam, (page no-19,20) DOSE:500-800 mg, thrice a day.

**ADJUVANT:**

Ghee

**DURATION:**

30-40 days.

**EXTERNALDRUG:**

Thirugukalli Ennai

**REFERENCE:**

Yugivaithiyakaviyam, (page no-20)

**OTRADAM**

**DRUG:**

Murnugaisurasa otradam

**REFERENCE:**

Yugivaithiyakaviyam (page- 40)

## RESULTS AND OBSERVATION

For the clinical study 40 patients were selected and treated in PG-III SirappuMaruthuvam Department, GSMC hospital, Palayamkottai. Results were observed with respect to the following criteria.

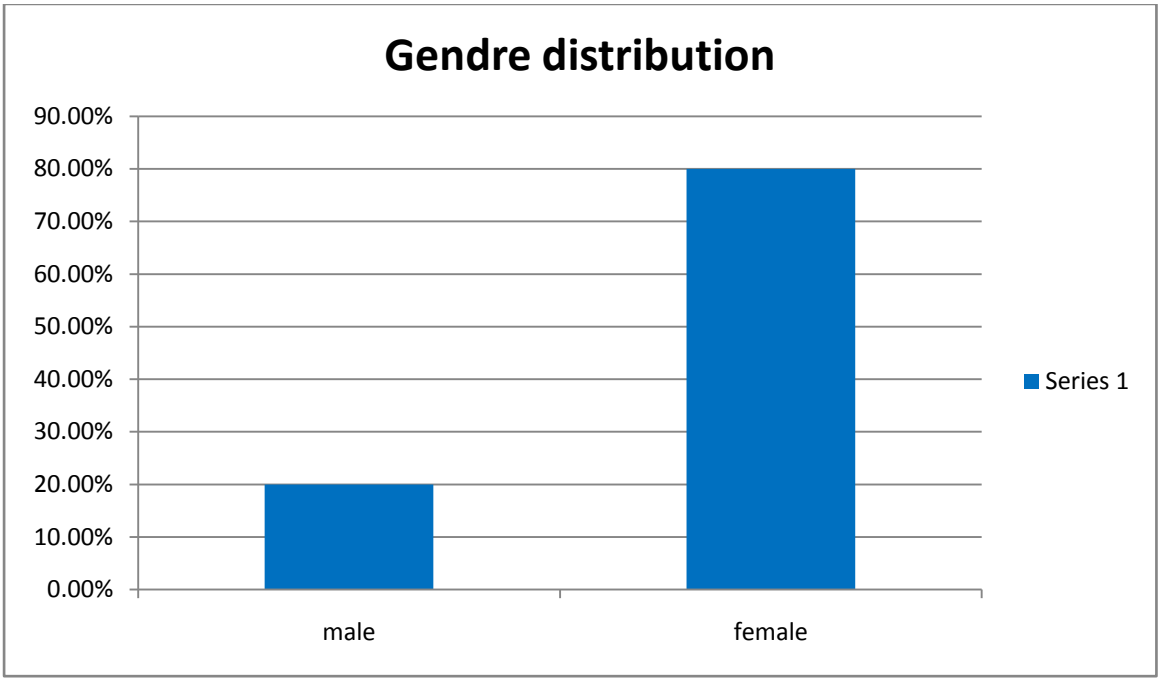
1. Gender distribution
2. Age distribution
3. Kalam
4. Occupation
5. Seasonal variation
6. Thinai
7. Socioeconomic factors
8. Gunam
9. Disturbance in vatha
10. Disturbance in pitha
11. Disturbance in kapha
12. Udalthathukkal
13. Envagaithervu
14. Naadi
15. Neikuri
16. Distribution of illness
17. Clinical manifestation
18. Locomotar system
19. Joint involvement
20. Improvement

## OBSERVATION AND RESULTS

### 1.GENDER DISTRIBUTION

**Table 5.1**

| S.NO | Gender | No. Of Cases | Percentage |
|---|---|---|---|
| 1 | Male | 8 | 20 |
| 2 | Female | 32 | 80 |
| | Total | 40 | 100 |



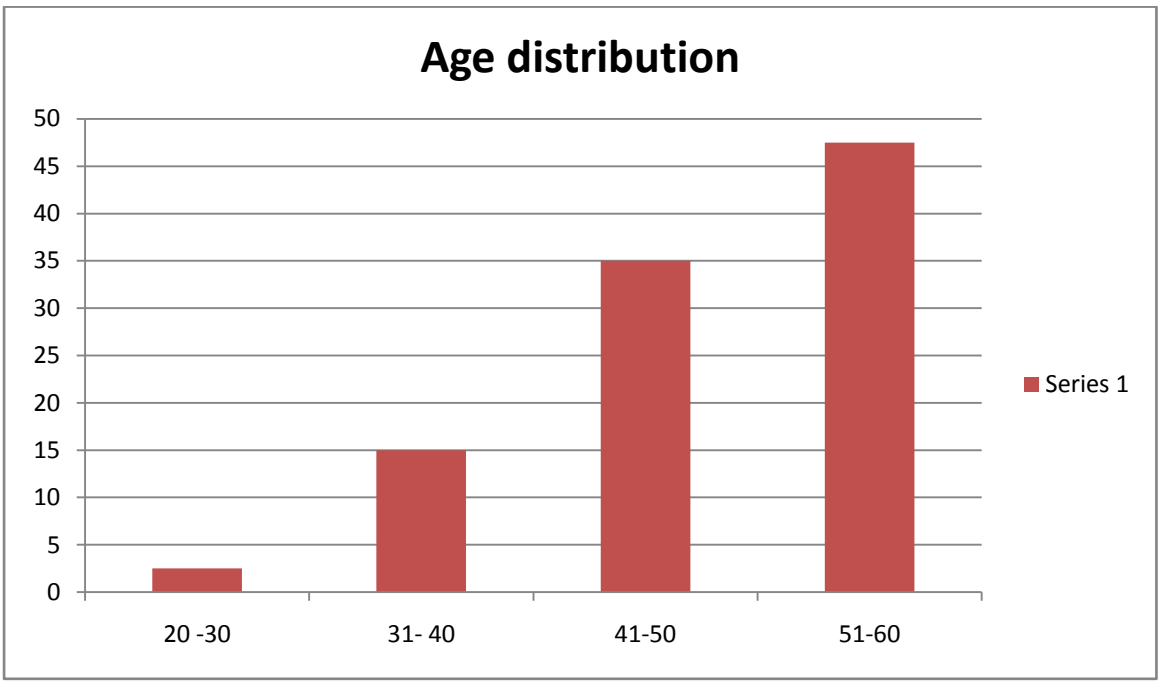

**Inference :**

Among 40 patients selected for this study 80% are female and 20% are male.

## 2.AGE DISTRIBUTION

**Table 5.2**

| S.NO | Age in year | No. of cases | Percentage |
|---|---|---|---|
| 1. | 20- 30 | 1 | 2.5 |
| 2. | 31-40 | 6 | 15 |
| 3. | 41-50 | 14 | 35 |
| 4. | 51-60 | 19 | 47.5 |
| | **Total** | **40** | **100** |



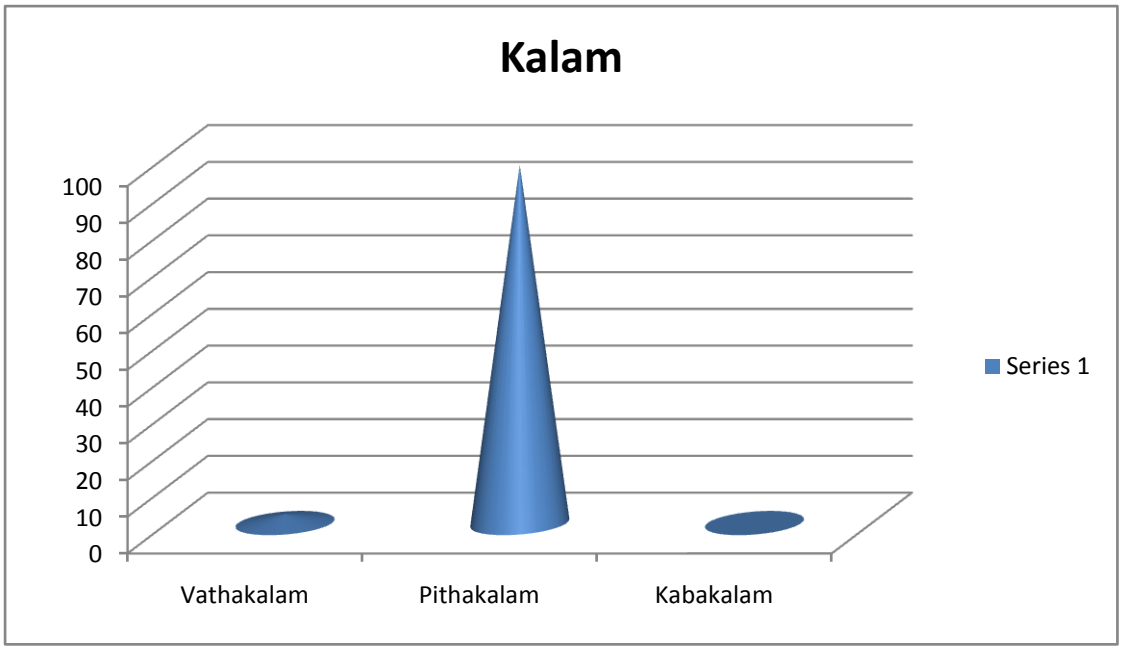

**Inference:**

The prevalence of the disease is found to be higher in the age group of 51- 60.

**3.KAALAM**

**TABLE 5.3**

| S.NO | Kaalam | No. of cases | Percentage |
|---|---|---|---|
| 1. | Vathakalam ( upto 33 yrs) | 1 | 2.5 |
| 2. | Pithakalam ( 34- 66yrs) | 39 | 97.5 |
| 3. | Kabakalam ( 67- 99yrs) | 0 | 0 |
| | **Total** | **40** | **100** |



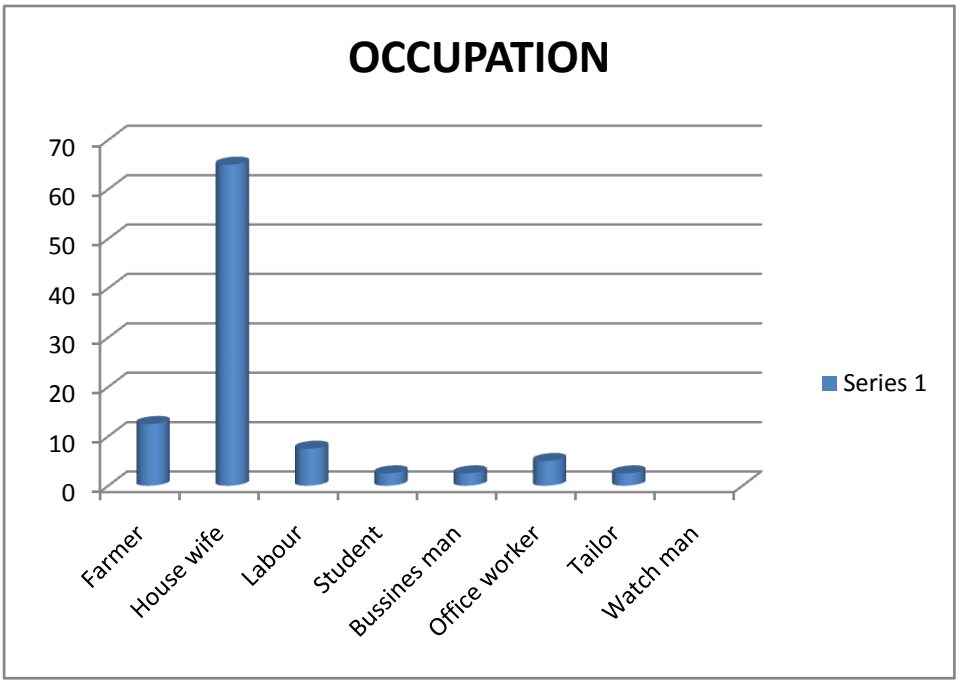

**Inference:**

Out of 40 cases, 97.5% of cases were founded to be in Pithakalam. 2.5% of cases were found to be in Vathakaalam.

**4.OCCUPATION**

**TABLE 5.4**

| S.NO | Occupation | No. of cases | Percentage |
|---|---|---|---|
| 1. | Farmer | 5 | 12.5 |
| 2. | House wife | 26 | 65 |
| 3. | Labour | 3 | 7.5 |
| 4. | Student | 1 | 2.5 |
| 5. | Business man | 1 | 2.5 |
| 6. | Office worker | 2 | 5 |
| 7. | Tailor | 1 | 2.5 |
| 8. | Watch man | 1 | 2.5 |
| | **Total** | **40** | **100** |




**Inference:**

65%  has been household, 7.5% has been labour

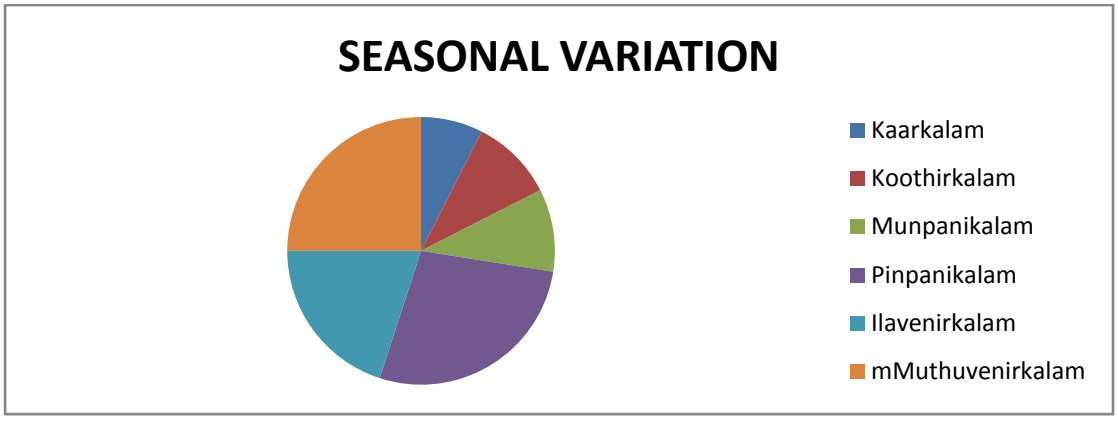
12.5% has been farmer, 2.5% has been student,tailor business and watch man

5% has been office worker

## 5. SEASONAL VARIATION

**TABLE 5.5**

| S.NO. | SEASON | NO OF CASES | PERCENTAGE % |
|---|---|---|---|
| 1 | Kaarkaalam - Aavani, Purattasi (15 Aug - 14 Oct ) | 3 | 7.5 |
| 2 | Koothirkaalam - Iyppasi, Karthigai (15 Oct - 14 Dec) | 4 | 10 |
| 3 | Mupanikaalam - Markazhi, thai (15 Dec – 14 Feb) | 4 | 10 |
| 4 | Pinpanikaalam – Masi, Panguni (15 Feb – 14 Apr) | 11 | 27.5 |
| 5 | Ilavenirkaalam - Chithirai, vaikasi (15 Apr – 14 June) | 8 | 20 |
| 6 | Muthuvenirkaalam-aani ,aadi (15 June-14 Aug) | 10 | 25 |



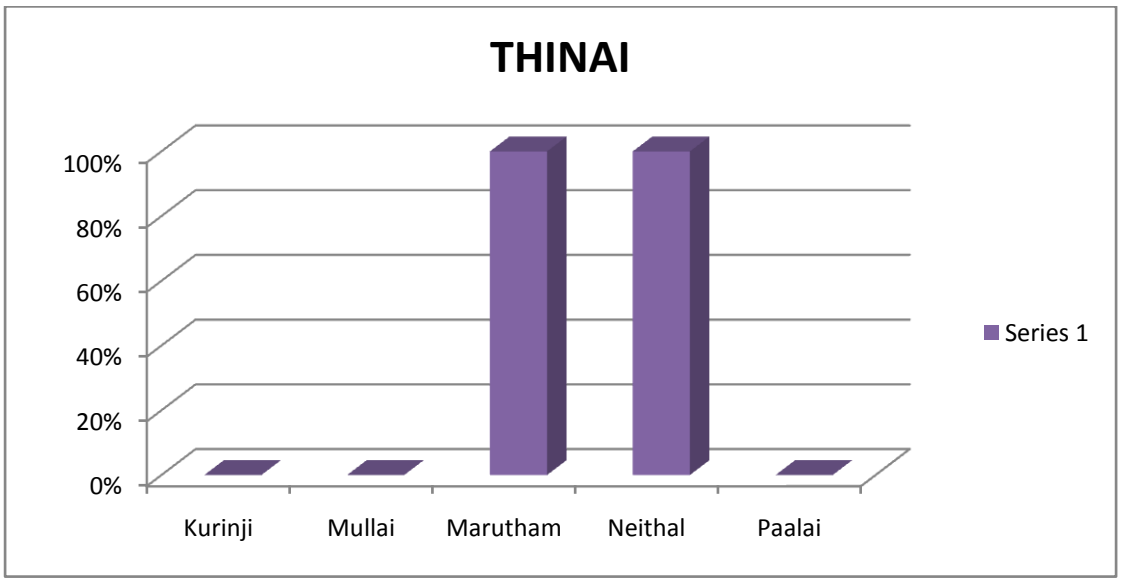

**Inference:**

Out of 40 cases 27% patients were admitted in pinpanikaalam, 25% of patients were admitted in Muthuvenirkaalam, 20% patients were admitted in Elavenirkaalm,1 0% of patients were admitted in Koothirkaalam, 10% of patients were admitted in munpanikaalam, 7% of patients were admitted in Karkaalam.

## 6. THINAI

**Table 5.6**

| S.NO. | THINAI | NO OF CASES | PERCENTAGE |
|---|---|---|---|
| 1 | KURINJI | 0 | 0 |
| 2 | MULLAI | 0 | 0 |
| 3 | MARUTHAM | 32 | 80 |
| 4 | NEITHAL | 8 | 20 |
| 5 | PALAI | 0 | 0 |



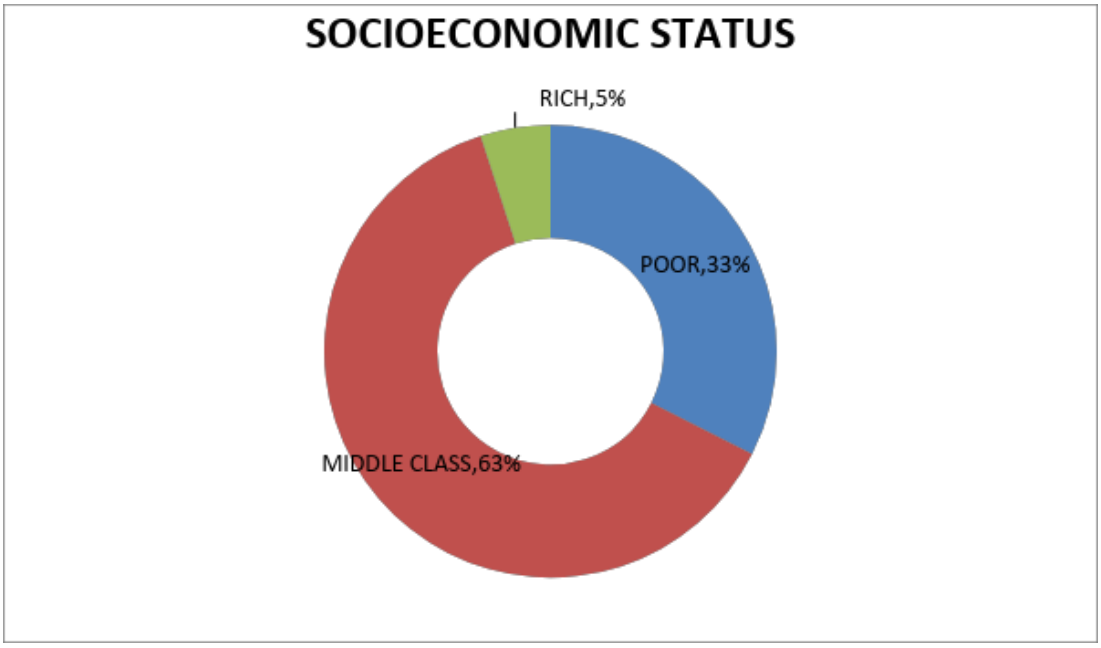

**Inference:**

Among 40 cases, majority were from MaruthaNilam( 80%).

## 7. SOCIO ECONOMIC STATUS

**TABLE5.7**

| S.NO | SOCIO ECONOMIC STATUS | NO OF CASES | PERCENTAGE |
|---|---|---|---|
| 1 | POOR | 13 | 32.5 % |
| 2 | MIDDLE CLASS | 25 | 62.5% |
| 3 | RICH | 2 | 5 % |



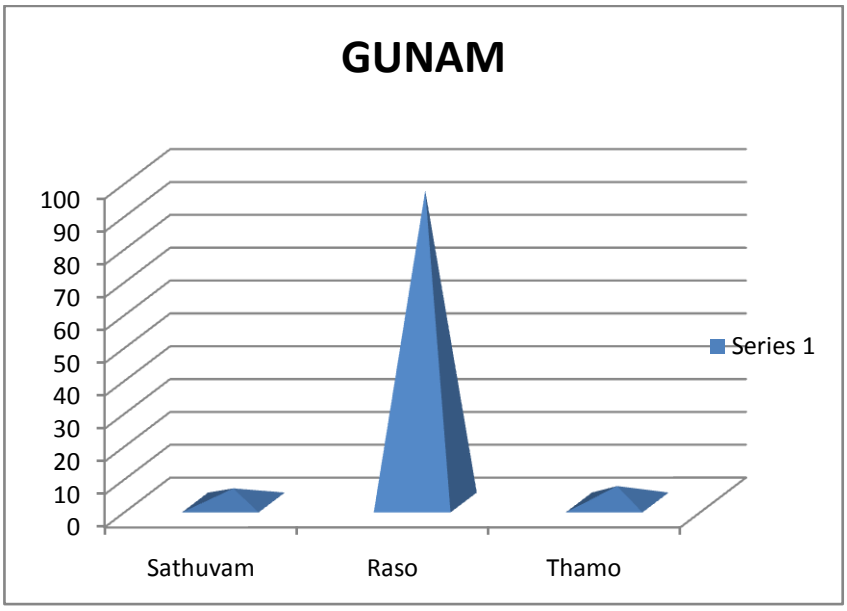

**Inference:**

The above study consists of 62.5% of cases from middle class, 32% of cases from poor and 5% of rich.

**8. GUNAM**

**TABLE 5.8**

| S.NO. | GUNAM | NO OF CASES | PERCENTAGE % |
|---|---|---|---|
| 1 | SATHUVA | 0 | 0 |
| 2 | RASO | 38 | 95 |
| 3 | THAMO | 2 | 5 |



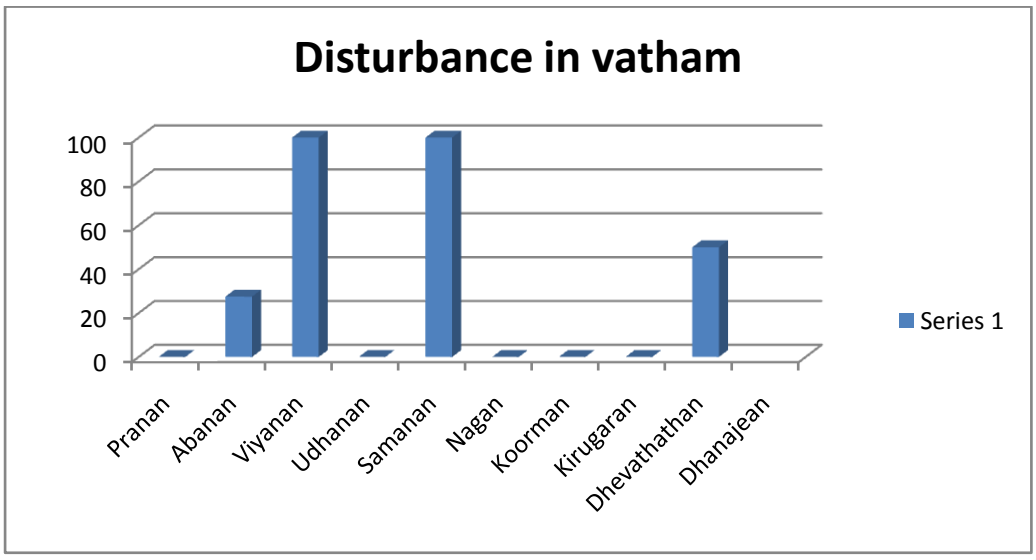

**Inference:**

- About 0% of the patients had Sathuvagunam
- 95% of the patients had Rasogunam
- 5% of the patients had Thamogunam

**DISTURBANCES IN VATHAM**

**Table 5.9**

| S.NO | VATHAM | NO OF CASES | PERCENTAGE |
|---|---|---|---|
| 1 | PRANAN | 0 | 0 |
| 2 | ABANAN | 11 | 27.5% |
| 3 | VYANAN | 40 | 100 % |
| 4 | SAMANAN | 40 | 100 % |
| 5 | UTHANAN | 0 | 0 |
| 6 | NAGAN | 0 | 0 |
| 7 | KOORMAN | 0 | 0 |
| 8 | KIRUGARAN | 0 | 0 |
| 9 | DHEVATHAHAN | 20 | 50 |
| 10 | DHANAJEYAN | 0 | 0 |



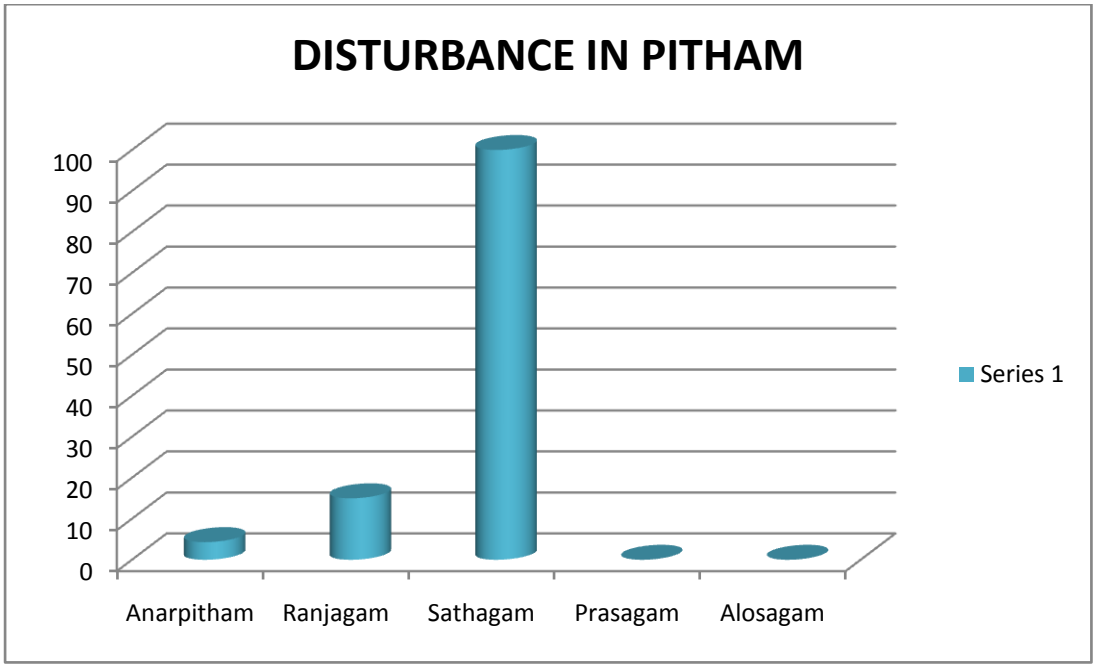

**Inference:**

Viyanan & Samanan were affected in all cases (100%). Abanan were affected in 27.5% cases, Dhevethathan were affected in 50%.

**DISTURBANCE IN PITHAM**

**TABLE 5.10**

| S.NO | PITHAM | NO OF CASES | PERCENTAGE% |
|---|---|---|---|
| 1 | Anarpitham | 10 | 25% |
| 2 | Ranjagam | 6 | 15% |
| 3 | Prasagam | 0 | 0 |
| 4 | Alosagam | 0 | 0 |
| 5 | Saathagam | 40 | 100 % |



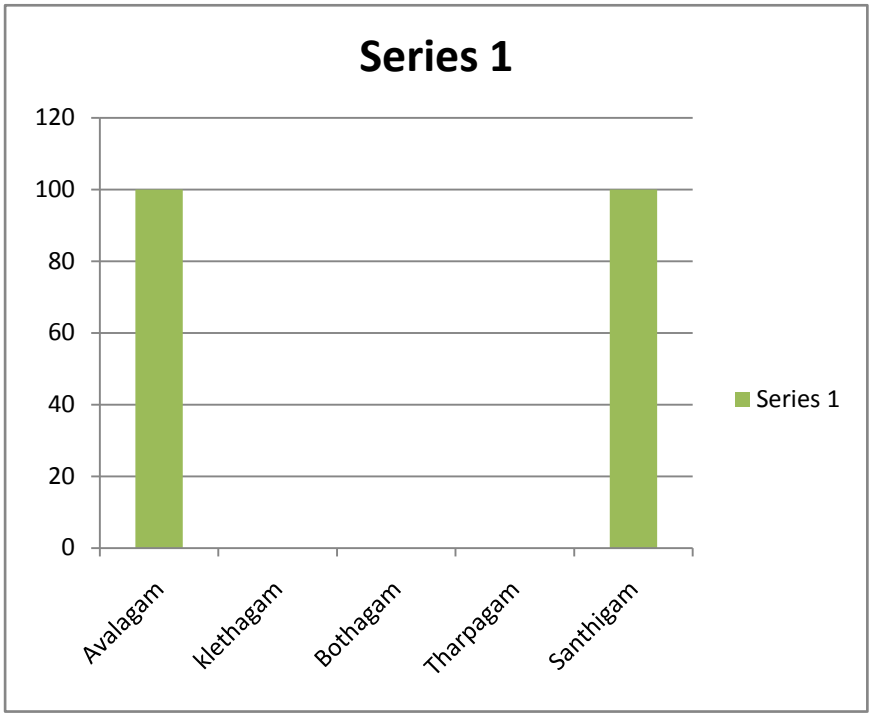

**Inference:**

Sathagapitham was affected in all the 40 cases (100%). Ranjagapitham was affected in 15% cases,Anarpitham was affected in 25% cases.

**DISTURBANCE IN KABAM**

**TABEL 5.11**

| S.NO | KABHAM | NO OF CASES | PERCENTAGE% |
|---|---|---|---|
| 1 | Avalambagam | 40 | 100 |
| 2 | Kilethagam | 0 | 0 |
| 3 | Pothagam | 0 | 0 |
| 4 | Tharpagam | 0 | 0 |
| 5 | Santhigam | 40 | 100 % |



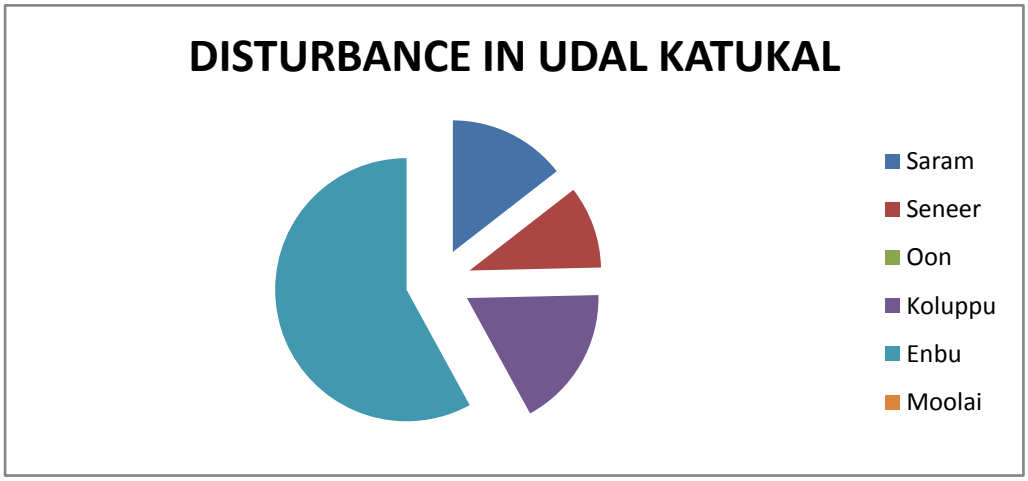

**Inference:**

Among all,Avalambagam andSanthiagamwas affected in all 40 cases (100%).

**DISTURBANCE IN UDAL KATTUKAL**

**TABLE 5.12**

| S.NO. | UDAL KATTUKAL | NO OF CASES | PERCENTAGE% |
|---|---|---|---|
| 1 | Saaram | 10 | 25% |
| 2 | Senner | 7 | 17.5% |
| 3 | Oon | 0 | 0% |
| 4 | Kozhuppu | 12 | 30% |
| 5 | Enbu | 40 | 100% |
| 6 | Moolai | 0 | 0% |
| 7 | Sukkilam/Suronitham | 0 | 0 |



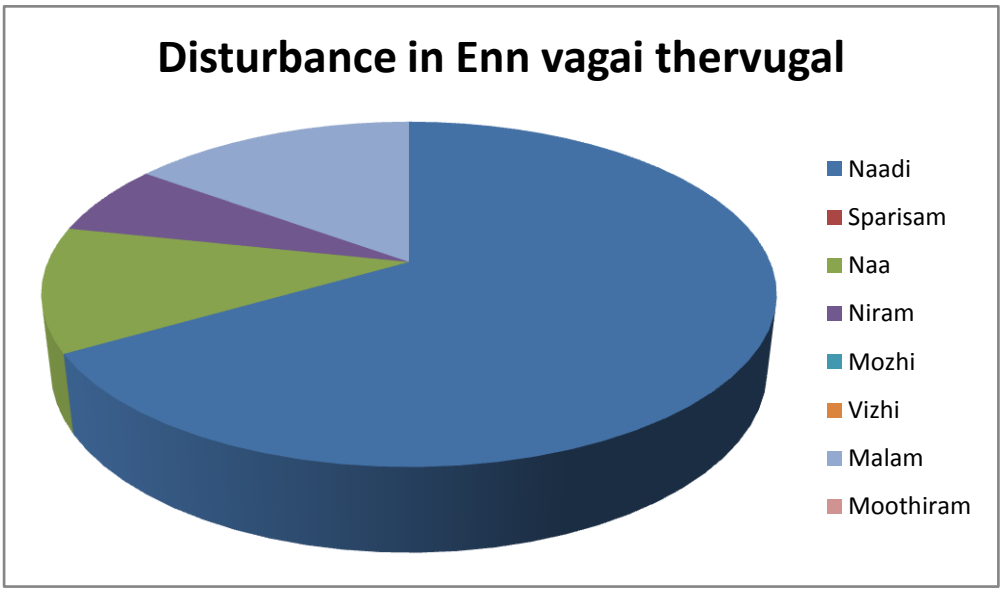

**Inference:**

In 7 udalkattukal , 100% was Enbu affected(restricted in joint movement),25% was saaram affected (loss of strength to body),30% was kozhuppu was affected(movement restriction) ,17.5% senner was affected(low energy).

**DISTURBANCE OF ENN VAGAI THERVU**

**TABLE 5.13**

| S.No. | Envagaithervugal | Number of cases | Percentage% |
|---|---|---|---|
| 1. | Naadi | 40 | 100 |
| 2. | Sparisam | 0 | 0 |
| 3. | Naa | 7 | 17.5 |
| 4. | Niram | 4 | 10 |
| 5. | Mozhi | 0 | 0 |
| 6. | Vizhi | 0 | 0 |
| 7. | Malam | 9 | 22.5 |
| 8. | Moothiram | 0 | 0 |



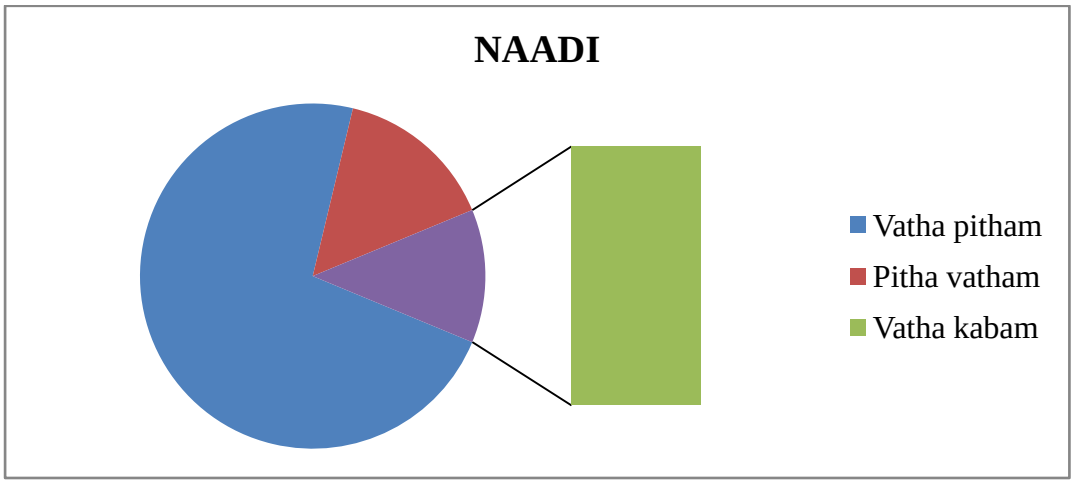

**Inference:**

It was learnt during the study that naadi was noted in all 40 cases( 100%). Malam was affected in 9 (22.5%).

## ILLUSTRATION OF NAADI

**TABLE 5.14**

| S.No. | Parameters | Number of cases | Percentage |
|---|---|---|---|
| 1. | Vathapitham | 29 | 72.5 |
| 2. | Vathakabam | 6 | 15 |
| 3. | Pithavatham | 5 | 12.5 |



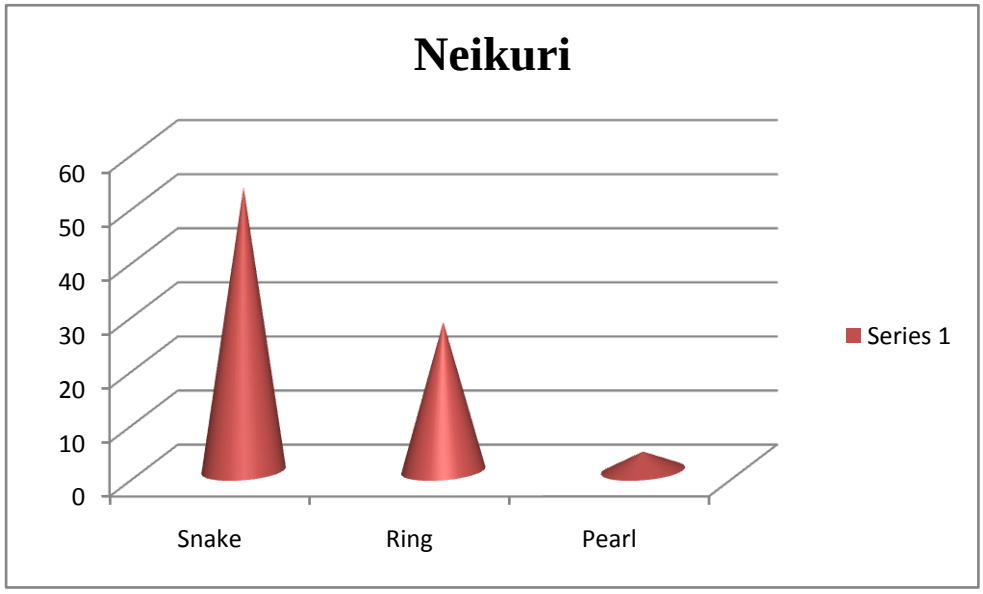

**Inference:**

As mentioned above thonthanaadi was noted in all cases and among them 29% were vathapithanadi, 15% were vathakabhanadi and remaining 12.5% were pithavathanadi.

**NEIKURI**

**TABLE 5.15**

| S.NO | SPREADING PATTERNS | NO OF CASES | PERCENTAGE% |
|---|---|---|---|
| 1 | Snake | 21 | 52.5 |
| 2 | Ring | 11 | 27.5 |
| 3 | Pearl | 8 | 20 |



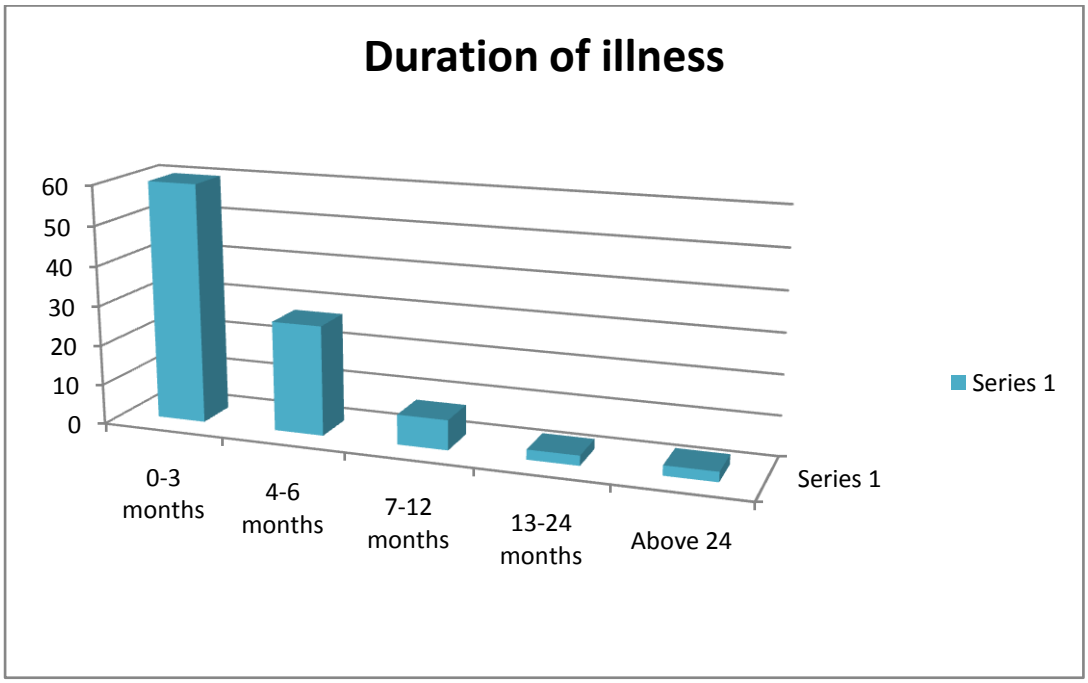

**Inference**

In neikuri analysis, 52.5% of the cases presented with Vathaneer, 27.5% with pithaneer, 20% with kabaneer.

**DURATION OF ILLNESS**

**TABLE 5.16**

| S.No. | Duration of illness (Months) | Number of cases | Percentage (%) |
|---|---|---|---|
| 1. | 0-3 | 24 | 60 |
| 2. | 4-6 | 11 | 27.5 |
| 3. | 7-12 | 3 | 7.5 |
| 4. | 13-24 | 1 | 2.5 |
| 5. | Above 24 | 1 | 2.5 |



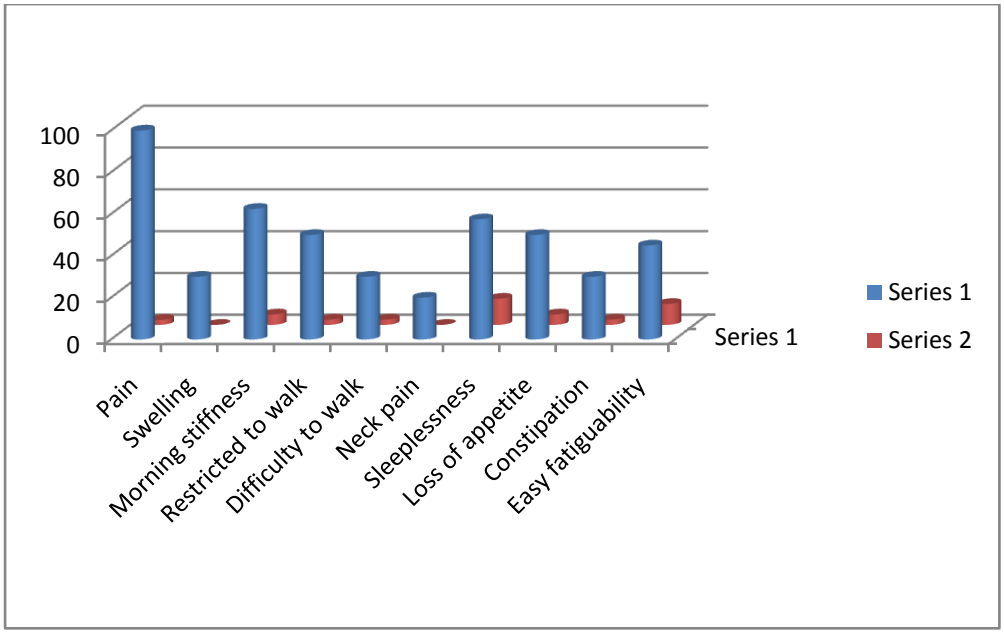

**Inference:**

In duration of illness, 60% occur upto 3 months, 27.5% occur in 4-6 months, 7.5% occur in 7-12 months, 2.5% occur in13-24 months, 2.5% occur in Above 24 months.

**CLINICAL MANIFESTATIONS**

**TABLE 5.17**

| S.NO | SYMPTOMS | BEFORE TREATMENT | | AFTER TREATMENT | |
|---|---|---|---|---|---|
| | | NO OF CASES% | PERCENTAGE% | NO OF CASES | PERCENTAGE% |
| 1. | Joint pain | 40 | 100 | 4 | 10 |
| 2. | Swelling | 12 | 30 | 0 | 0 |
| 3. | Morning stiffness | 25 | 62.5 | 2 | 5 |
| 4. | Restricted to walk | 20 | 50 | 1 | 2.5 |
| 5. | Difficulty to walk | 12 | 30 | 1 | 2.5 |
| 6. | Neck pain | 8 | 20 | 0 | 0 |
| 7. | Difficulty in chewing | 0 | 0 | 0 | 0 |
| 8. | Fever | 0 | 0 | 0 | 0 |
| 9. | Sleeplessness | 23 | 57.5 | 5 | 12.5 |
| 10. | Loss of appetite | 20 | 50 | 2 | 5 |
| 11. | Loss of weight | 0 | 0 | 0 | 0 |
| 12. | Constipation | 12 | 30 | 1 | 2.5 |
| 13. | Easy fatiguability | 18 | 45 | 4 | 10 |




**Inference:**

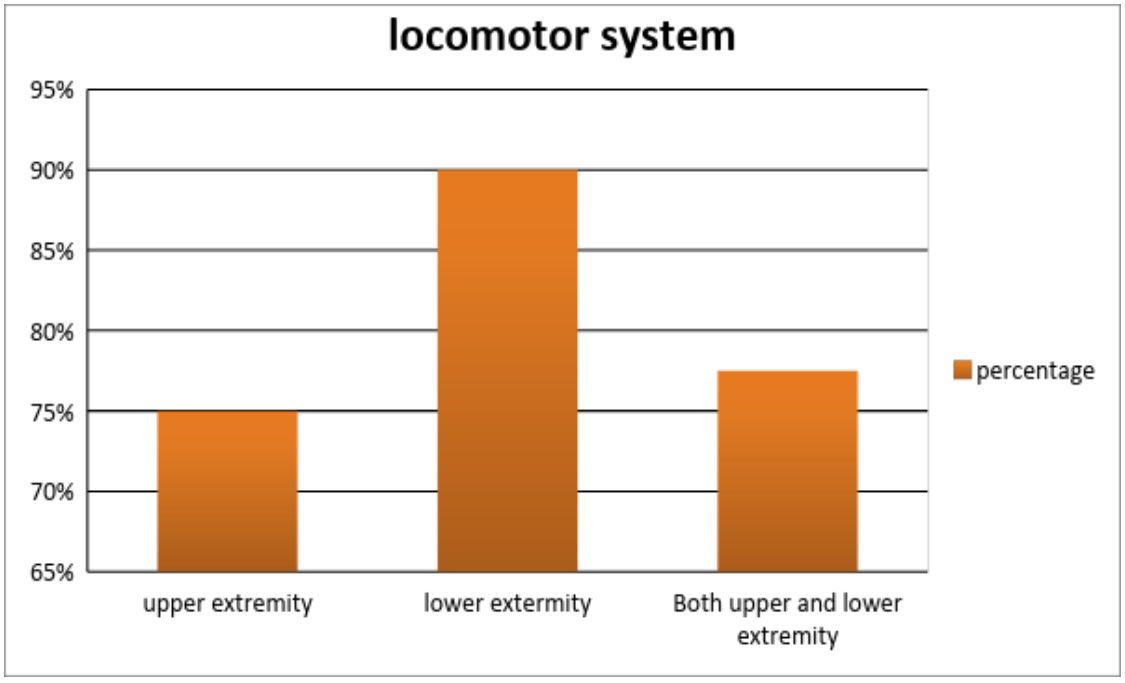
Before treatment 100% of cases had pain, 30% of cases has difficulty to walk, 62.5% of cases had morning stiffness, 50% if cases had restricted to walk, 57.5% of cases had sleeplessness,30% of cases had swelling and 50% of cases had loss of appetite, 45% of cases had easy fatiguability and 30% has constipation.

After treatment 10% of cases had pain,5% cases had morning stiffness, loss of appetite. 10% of cases had easy fatiguability,2.5% cases had restricted and difficulty to walk. 0% cases had swelling, 2.5% of cases had constipation.

**LOCOMOTOR SYSTEM**

**TABLE 5.18**

| S.NO | INVOLVEMENT OF UPPER AND LOWER EXTREMITIES | NO OF CASES | PERCENTAGE % |
|---|---|---|---|
| 1 | Upper extremity | 30 | 75 |
| 2 | Lower extremity | 36 | 90 |
| 3 | Both upper and lower extremity | 31 | 77.5 |



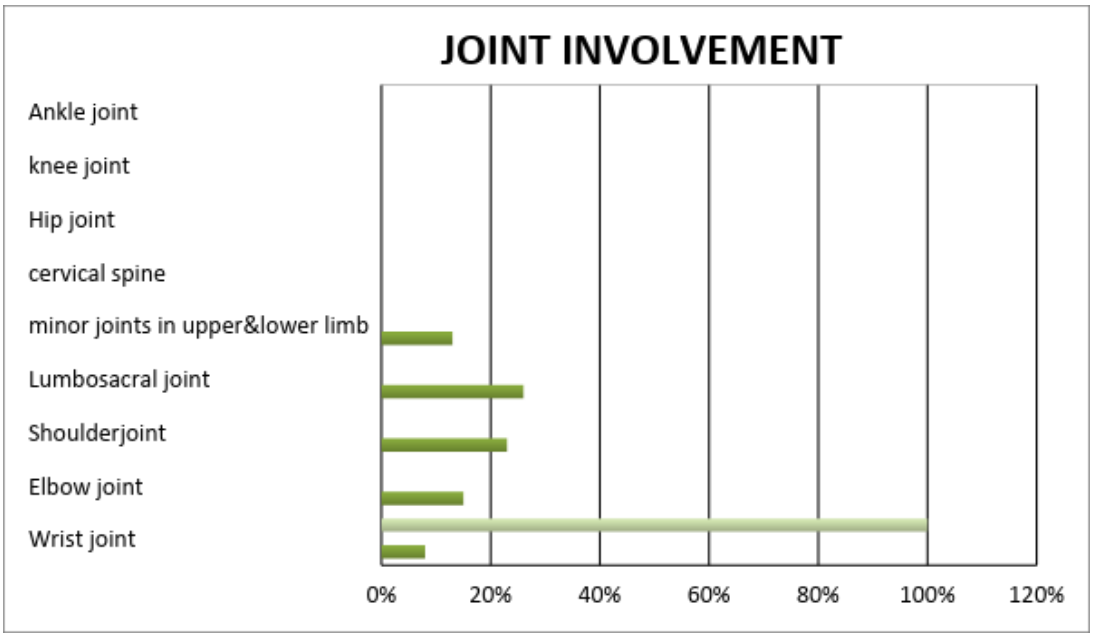

**Inference**

90% cases show lower extremity, 75% cases show upper extremity and 77.5% cases show both

**INCIDENCE OF INDIVUDUAL JOINT INVOLVEMENT**

**Table 5.19**

| S.NO | JOINT INVOLEMENT | NO OF CASES | PERCENTAGE % |
|---|---|---|---|
| 1. | Wrist joint | 8 | 20 |
| 2. | Elbow joint | 12 | 30 |
| 3. | Shoulder joint | 23 | 57.5 |
| 4. | Lumbosacral joint | 26 | 65 |
| 5. | Minor joints in upper &lower limb | 13 | 32.5 |
| 6. | Cervical spine | 14 | 35 |
| 7. | Hip joint | 11 | 27.5 |
| 8. | Knee joint | 36 | 90 |
| 9. | Ankle joint | 12 | 30 |



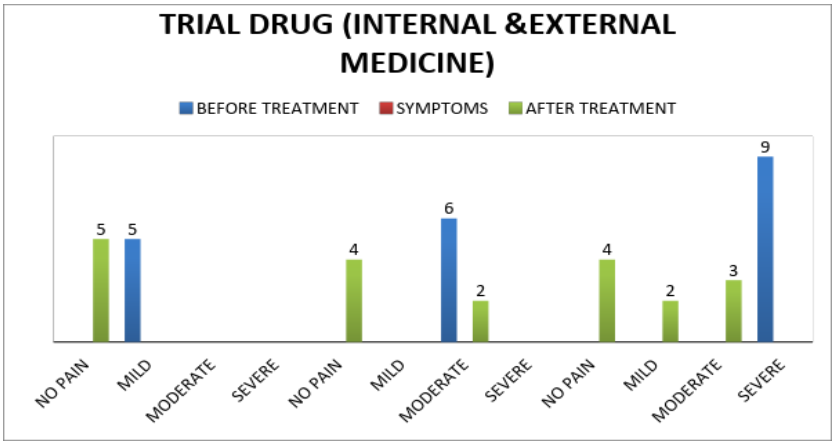

**Inference**

100% cases show pain in knee joint 26% cases show pain in lumbo sacral joint, 11% cases show pain in hip joint an ankle joint, 23% cases show pain in shoulder , 8% cases show pain inwrist joints, 15% cases show pain in elbow joint, 14% cases show pain in cervical spine.13% case show pain in minor joints in upper and lower limb.

**ASSESSMENT OF CURATIVE EFFECTS IN PATIENTS TREATED WITH TRIAL DRUGS (INTERNAL AND EXTERNAL MEDICINES WITH THERAPY)**

**Table 5.20**

| S.NO | BEFORE TREATMENT | | AFTER TREATMENT | |
|---|---|---|---|---|
| | SYMPTOMS | NO OF CASES | SYMPTOMS | NO OF CASES |
| 1. | Mild | 5 | No pain | 5 |
| | | | Mild | 0 |
| | | | Moderate | 0 |
| | | | Severe | 0 |
| 2. | Moderate | 6 | No pain | 4 |
| | | | Mild | 0 |
| | | | Moderate | 2 |
| | | | Severe | 0 |
| 3. | Severe | 9 | No pain | 4 |
| | | | Mild | 2 |
| | | | Moderate | 3 |
| | | | Severe | 0 |




**Inference**

From the above study, it was inferred that severe pain that was noted in patients before treatment had a remarkable decline after treatment similarly moderate and mild pain were also observed to have decreased after treatment.

# DISCUSSION

The main aim of the treatment was to study the Therapeutic effect of the drug KODIVELI CHOORANAM to reduce pain, swelling and restricted joint movements in the disease Santhuvatham. The clinical features of Santhuvatham can be correlated to Polyarthritis in modern science. Polyarthritis is a chronic inflammatory disease associated with symmetrical or asymmetrical involvement of joints. After conformation of the diagnosis of the trail drug was administrated along with the special therapies. Observation were noted and analysed. They are discussed here under.

**Sex distribution**

According to the Gender among the 40 patients selected, the disease was found to be higher in females 80% and in males 20%.

**Age distribution**

The statistical study shows high incidence of santhuvatham in the age group between 51-60 years and lowest incidence in the age between 20-30 years.

Most of the patients belong to pithakalam.

**Paruvakalam**

In Paruvakaalam(Season) out of 40 cases, 10%cases were included in Munpanikaalam, 27.5% cases were Pinpanikaalam and 7.5% were kaarkalam, 7.5% cases were koothirkaalam, 25% cases were muthuvenirkaalam.

**Gunam**

Based on Gunam out of 40 cases 100% were Rasogunam.

**Thinai**

In Thinai out of 40 cases 80% cases were from MaruthaNilam,20% were from Neithal Nilam.

**Socio economic status**

In Socio economic status out of 40 cases, 62.5% cases belonged to Middle Class, 32.5% cases belonged to Poor, 5% cases belonged to Rich.

**Occupation**

In occupational distribution out of 40 cases, 65% were household,7.5% were labour 12.5% were farmer, 2.5% were student,tailor business and watch man 5% were office worker.

**Disturbance in vatham**

In Vatham out of 40 cases, 100% cases were affected in Samaanan and Viyaanan, 27.5% cases were affected in Abanan,

**Disturbance in pitham**

In Pitham out of 40 cases, Saathagam was affected in 100% cases. Anarpitham was affected in 25% cases and Ranjagam was affected in 15% cases.

**Disturbance in kabam**

In Kabam out of 40 cases, Santhigam was affected in 100% .

**Udal thathukal**

In 7 udal kattukal, 100% was Enbu affected(restricted in joint movement), 25% was saaram affected (loss of strength to body),30% was kozhuppu was affected(movement restriction) ,17.5% senner was affected(low energy).

**En vagai thervu**

In Envagaithervugal among the 40 cases, 100% was thontha naadi,17.5% naa were affected and 22.5% seen in malam.

**Naadi**

While seeing the Naadi among the 40 cases PithaVaathanaadi was found in 10%, VaathaPithanaadi was found 82.5% cases and VaathaKabam was found in 7.5%cases.

**Neikuri**

In Neikkuri, among the 40 cases,52.5% of the case showed snake pattern 27.5% of the case showed ring pattern and 20% shows pearl pattern.

**Duration of illness**

In Duration of illness out of 40 cases, 60% were occur in 3 months, 27.5% occur in 4-6 months, and 7.5% occur in 7-12 months and 2.5% occur in 13-24 months,2.5% occur in above 24 months.

100% cases show pain in knee joint 26% cases show pain in lumbo sacral joint, 11% cases show pain in hip joint an ankle joint, 23% cases show pain in shoulder , 8% cases show pain inwrist joints, 15% cases show pain in elbow joint, 14% cases show pain in cervical spine.13% case show pain in minor joints in upper and lower limb.

**Clinical manifestation**

Before treatment 100% of cases had pain, 30% of cases has difficulty to walk, 62.5% of cases had morning stiffness, 50% if cases had restricted to walk, 57.5% of cases had sleeplessness,30% of cases had swelling and 50% of cases had loss of appetite, 45% of cases had easy fatiguability and 30% has constipation.

**Locomotor system**

In Locomotor system the Lower extremity was affected in 90% cases, Upper extremity was affected in 75% cases and both was affected in 77.5% cases.

**Improvement**

Overall Result in my study - 70% cases showed Good improvement, 20% cases showed Moderate improvement, 10% cases showed Mild improvement.

**Investigation**

Laboratory investigation of blood and urine were done for all 40 cases. There were significant changes in blood before and after treatment. Rheumatoid arthritis factor was negative in all cases. Blood sugar, blood urea and serum cholesterol were done. The values were found to be normal in all the cases.

**Pre clinical studies**

The phytochemical study of KODIVELI CHOORANAM had revealed the presence of Calcium, Sulphate, Starch, tannic acid, unsaturated compound and amino acid.

**Pharmacological studies**

The pharmacological studies done in KODIVELI CHOORANAM revealed that the presence of action such as ANTI INFLAMMATORY and ANALGESIC.

**Toxicity study**

Acute toxicity study in rats for KODIVELI CHOORANAM revealed that it has no toxicity effect.

**Treatment**

The treatment was aimed to retain the deranged thoshas and providing relief from symptoms. Before treatment the patients were advised to take vellai ennai-15ml with hot water during morning for first day of treatment.

From the second day onwards internal medicine KODIVEL CHOORANAM 500-800 mg twice a day after food and THIRUGUKALLI ENNAI is given as external.

At the time of treatment patient were advised to follow pathiyam and specifically advised to avoid foods which increase vadha.

Along with the course of treatment the complementary therapy fomentation was given additionally to every patient.

The outcome of this study is mainly assessed by reduction of pain in all joints, increased range of reduction of restricted movements and improvement in quality of life. Universal pain assessment scale was also used to detect proper outcome. No adverse effect wasnoted for both internal and external medicine along with the course of treatment.

# SUMMARY

A collective study of the disease Santhuvatham is made covering the all aspects of the disease enclosing siddha and modern science aspects .Study drug standardised are botanical, pharmacological, biochemical and toxicological, these are supportive of trial drug for our santhuvatham.40 cases with santhuvatham were diagnosed clinically, every patients have received otradam and observed for clinical diagnosis, Lab Investigations and treatment of trial medicines.The peak age incidence of Santhuvatham was found 51-60 years age group.Clinical diagnosis of the above disease was done on the basis of clinical features described in YugiVaidhyaChinthamani and Siddha Maruthuvam.Before admission for study their careful detailed history of the sufferings, duration, their occupation, native etc. are elicited from the 40 selected patients.The trial medicines for the clinical treatment and management of Santhuvatham were KODIVELI CHOORANAM, twice a day with ghee and for external use THIUGUKALLI ENNAI. External therpyotradam had effective. Biochemical analysis ofKDIVELI CHOORANAM showed that the presence of Calcium, Sulphate, Starch, tannic acid, unsaturated compound and amino acid. The pharmacological study, the toxicological studies were done.During treatment, all the patients keep under strict pathiyam, a specific dietary regimen, it has been clearly mentioned in review of siddha literature.No any adverse effect of study drugs. All the patients were advised to exercise regularly.The observation made during the clinical study shows that the main drugs KODIVELI CHOORANAM is conducive.

# CONCLUSION

Now a daysSanthuvatham is more common causing social burden to families. The physiochemical analysis reveals that the trial drug contains important constituents which have beneficiary effects in arthritis.

The Toxicological studies reveal that the trial drug did not produce any toxicity in rat models.The Preclinical studies reveals that the trial drug hasanti inflammatoryand analgesic action .The clinical study shows significant decrease in the symptoms of the disease.The trial drug gives a good confidence in the management of Santhuvatham and economicaly very low cost.No contra indications was noted during the course of treatment.Finally the author conclude that the trial drug KODIVELI CHOORANAM and THIRUGUKALLI ENNAI is effective in SANTHUVATHAM.along with therapy(Otradam). For more results further studies should be continued in this.

## ANNEXURE 1

## PREPARATION AND PROPERTIES OF TRAIL DRUG

## INTERNAL DRUG – KODIVELI CHOORANAM

**Refernce- YUGI VAITHIYA KAVIYAM**

**Ingredients:**

| | | | |
|---|---|---|---|
| Omam | - | Carum copticum | 35g |
| Kodiveli | - | Plumbago indica | 35g |
| Indhuppu | - | Sodium chloride impure/Rock salt | 35g |
| Perungayam | - | Ferula asafetida | 35g |
| Koshtam | - | Saussurea costus | 35g |
| Chukku | - | Zingiber officinalis | 35g |
| Sandhanam | - | Santalum album | 35g |
| Devatharam | - | Cedrus deodara | 35g |
| Thipili | - | Piper longum | 35g |
| Imbural | - | Oldenlandia umbellata | 35g |
| Vasambu | - | Acorus calamus | 35g |
| Karunjeragam | - | Nigella sativa | 35g |
| Maruthondri | - | Lawsonia inermis | 35g |
| DOSE | - | 790mg twice a day | |
| ADJUVANT | - | Ghee | |
| DURATION | - | 30-40 days. | |

**STANDARD OPERATING PROCEDURE**

**Source of raw drugs**

The required drugs for preparation of KODIVELI CHOORANAM(internal) and THIRUGUKALLI ENNAI (external) would be purchased from a well reputed country shop and standardized before preparing medicines. This raw drug would be authenticates and then they were purified and the medicines were prepared in Gunapadam laboratory of Government Siddha Medical College, Palayamkottai.

**PURIFICATION OF RAW DRUGS:**

**Chithiriramoolam ver**

The root will be baked in steam of milk.

**Thippili**

Remove the adulterant and allow it to dry.

**Indhu uppu**

Soaked in kaadi neer in 3 days,keep under sunlight ,then dry it.

**Chukku**

Dried ginger, washed it and the outer skin is removed and collected.

**Preparation:**

The above mentioned drugs are purified properly as said above and they are dried in shade and made into fine powder.

**Drug storage:**

The trial drug Kodiveli chooranam is stored in a clean and dry air tight container and it is dispensed to the patients in packets.

**EXTERNAL MEDICINE:**

**THIRUGUKALLI ENNAI**

**Referance :** Yugi Vaithiya Kaviyam

Thirugukalli - Euphorbia tirucalli - 560g

Neem oil - Azadirecta indica - 1.3 l

**Preparation :**

Make decoction of thirugukalli with water and add neem oil to that decoction and boil it again and filtered and keep it in a container.It can be used as an external application which cure all vadha diseases.

**Drug storage:**

The trial drug is stored in clean dry air tight container and it is given to the patients in disposable pet bottles.

**EXTERNAL THERAPHY:**

**MURUNGAI SURASA OTRADAM**

**Ingredients:**

| | | |
|---|---|---|
| Murungai leaf | - | Moringa oleifera |
| Garlic | - | Allium sativum |
| Perungayam | - | Ferula asafotida |
| Milagu | - | Piper nigra |

**Preparation**:

Take equal amount of murungai leaf,coconut slice.pepper,garlic and fried it and add asafoetida to it.

**GUNAPADAM ASPECT**

**INTERNAL MEDICINE : KODIVELI CHOORANAM**

**1.Tamil name** - **ஓமம்**

**Botanical name** - Carum copticum

**English name** - The Bishops weed

**Family** - Apiaceae

**Parts used** - Seed

சுவை - கார்ப்பு. தன்மை - வெப்பம், பிரிவு - கார்ப்பு

பொதுகுணம்

சுத்சுரங் காசஞ் செரியாமந் தம்பொருமல்
பேதியிரைச் சல்கடுப்பு பேராமம் - ஓதிருமல்
பல்லொடுபல் மூலம் பகமிவைநோ யென்செயுமோ?
சொல்லொடுபோம் ஓமமெனச் சொல்.

(அ.கு)

இதனால் ஐயசுரம், செரியாமாந்தம், பொருமல், குடலிரைச்சல், பகம் (குய்யரோகம்) இவைகள் போம்.

**2.Tamil name - கொடிவேலி**

**Botanical name** - plumbago zeylanica

**English name** – ceylon lead wort

**Family** - plumbaginaceae

**Parts used** - root

சுவை - கார்ப்பு, தன்மை - வெப்பம், பிரிவு - கார்ப்பு

பொதுகுணம் :

கட்டிவிர ணங்கிரந்தி கால்கள் அரையாப்புக்
கட்டிச்சூ லைவீக்கங் காழ்மூலம் - முட்டிரத்தக்
கட்டுநீ ரேற்றங் கனத்த பெருவயிறும்
அட்டுங் கொடிவேலி யாம்.

(அ.கு

இதனால் கட்டி, புண், கழலை, வளி நோய், அரையாப்புக்கட்டி, குத்தல், சோபை, நீரேற்றம், பெருவயிறு இவைபோம்.

கட்டியே சூலைக்கட்டு கருதிடு குறிப்புண் கிரந்தி
ஒட்டுமே காரணத்தோடு முறுமரை யாப்பு மன்றி
விட்டிடா நெறிச்சு ரம்பின் வியன்விட மச்சு ரந்தான்
பொட்டெனப் பறந்து போகும் புகழ்கொடி வேலி கண்டால் (ஏடு)

இன்னும் இதனால், சூலைக்கட்டு, நெறிசுரம், நச்சுசீசரம் முதலியவையுந் தீரும்

**Constituents:**

Plumbagin I, Isohinanolone II, Plmbagic acid III, Beta sitosterol, transcinngemic acid, Vanillic acid.

**Action :**

Anti periodic

Diaphoretic

**Root:**

Digestive power & promote the appetite.

**3.Tamil name** - **பெருங்காயம்**

**English name** – Asafoetida

**Botanical name** - Ferula asafoetida

**Fmaily** - Apiaceae

**Parts used** - Resin

சுவை - கைப்பு, கரகரப்பு / தன்மை - வெப்பம் பிரிவு - கார்ப்பு

பொதுகுணம்:

தந்தவே தந்த மூலத்தெழும்பிணி
சருவகாளம் விருச்சிகங்கீடம்மா
மந்தம்வாதம் உதாவர்த்தம் அல்குல்நோய்
மார்பணங்கட்ட குன்மம்மகோதரம்
உந்துகெர்ப்பந்தின வித்திரஞ்சூலைச்சூர்
உதிரப்பூச்சி சிலேத்துமத்துறும்வலி
வந்தமெய்க்கடுப் போடிவைமுற்றுமே
மாயுநாறுநற் காயங்கிடைக்கினே (தே.கு)

இதனால் மந்தம், ஏப்பம், வாதம், சூதகவாயு, குன்மம், பெருவயிறு, சூதகச்சூலை, குருதியிலுள்ள நுண்புழு, ஐயத்தால் பிறந்த வலிகள் உடல் கடுப்பு, என்னும்ம இவைகள்.

**4.Tamil name** : **கோஷ்டம்**

**Botanical name** : Saussurea costus

**English name** : Costus Root

**Family** : Asteraceae

**Parts used** : Root

**Action** : Tonic, Stimulant, Stomachic

சுவை - கைப்பு, விறுவிறுப்பு / தன்மை - வெப்பம் / பிரிவு - கார்ப்பு

பொதுகுணம்

நாட்டிலுறு வெட்டை நடுக்கம் எனுநோய்கள்
கோட்டமெனச் சொன்னால் குலையுங்காண் - கூட்டிற்
சுரதோடந் தொண்டை நோய் தோலாத பித்தம்
பரதேசம் போமே பறந்து

(அ.கு)

திட்டிகவுள் அகடுகளுஞ் சென்னி நாவாய்
செறிபிணிவெப் பதைப்புதா வர்த்தம் ஊதை
முட்டியெழு முளைவிரணம் சுவாச காசம்
மூடிகத்தோ டரவுமர விடங்கள் மேகக்
கட்டிஅஜ கல்லிவிட பாகம் பூத
கணம்பால கிரகமொடு தாது நட்டஞ்
சொட்டிவரு பிரமிபித்தம் இவையொருங்கே
தொலையும் விர ணாரிக்குச் சுகப் போறாமே

(தே.கு)

இதனால் கண், தாடை, வயிறு, கழுத்து, தலை, நா, வாய், இவ்விடத்திலுண்டாகும் நோய்கள், சுரம், அதைப்பு, வாயு, மூலமுளை, மேகக்கட்டி, பயித்தியம் இவை போம்.

**5.Tamil name** - **சுக்கு**

**English name** – Dried Ginger

**Botanical name** - Zingiber ooficinale

**Family** - Zingiberaceae

**Parts used** - Rhizome

**Action** - Stimulant, Stomachic, Carminative

சுவை - கார்பு / தன்மை - வெப்பம், பிரிவு - கார்ப்பு

பொதுகுணம்

சூலைமந்தம் நெஞ்சரிப்பு தோடமேப் பம்மழைலை
மூலம் இரைப்பிருமல் மூக்குநீர் - வாலகப
தோடமதி சாரந் தொடர்வாத குன்மநீர்த்
தோடம்ஆ, மம்போக்குஞ் சுக்கு

(அ.கு)

சுக்கினால், செரியாமை, மார்பெரிச்சல், புளியேப்பம், புளியேப்பம், வெப்பம், கீழ்வாய் நோய், நீரேற்றம், குன்மம், வயிற்றுப்பிசம், முகநோய், குலைவலி, பாண்டு, வயிற்றுக் குத்தல், ஐயசுரம் போம்.

வாதப்பிணிவயி றூதற் செவிவாய்
வலிதலை வலிகுலை வலியிரு விழிநீர்
சீதத் தொடுவரி பேதிப் பலரோ
சிகமலி முகமக முகமிடி கபமார்
சீதச் சுரம்விரி பேதச் சுரநோய்
தெறிபடுமென மொழி குவர்புவி தனிலே
ஈதுக் குதவுமி தீதுக் குதவா
தெனும்விதி யிலைநவ சுறுகுண முனவே

(தே.கு)

**6.Tamil name** - **சந்தனம்**

**Botanical name** - Santalum album

**English name** - Sandalwood

**Family** - Santalaceae

**Parts used** - Wood

**Action** - Alterative, Stimulant, Cooling, Disinfectant

சுவை - கைப்பு, சிறுதுவர்ப்பு / தன்மை - திட்பம், வெப்பம் / பிரிவு - இனிப்பு பொதுகுணம்

கோதில் சந்தனஞ் சீதோஷ்ணங் கொண்டிருக்கும்
வாதபித்தம் ஐயம் மனப்பிரமை - ஓதுசுரம்
மேகம் தனித்தாகம் வெப்பு சொறி யும்போக்கும்
ஆகந் தனக்குறுதி யாம். (அ.கு)

இதனால் முக்குற்றம், மனக்கலக்கம், உட்சூடு, போம், உடல் வன்மை பெரும

**7.Tamil name** - **தேவதாரம்**

**English name** - Himalayan Cedar

**Botanical name** - Cedrus deodara

**Family** - Pinaceae

**Parts Used** - Wood

**Action** - Astrigent, Febrifuge

**தேவதாரம்** / சுவை - சிறுகைப்பு / தன்மை - வெப்பம் / பிரிவு - கார்ப்பு பொதுகுணம்

தேவதா ரக்குணந்தான் சேர்ந்துவாளர் பீனிசத்தைக்
காவகத்தி லோட்டுங் கரப்பலவே - மாவலவர்
சொல்லும்பு ராண சுரமொடுநீ ரேற்றத்தை
வெல்லு மனற்றணிக்கு மெய்

(அ.கு)

இதனால் பீனிசம், பழையசுரம், நீரேற்றம், உடல் வெப்பம் நீங்கும். மேலும் இதனை நடுக்குவாயு, சுரம் இவைகளுக்கும் வழங்கலாம்.

**8.Tamil name** - **திப்பிலி**

**English name** - Long peper

**Botanical name** - Piper longum

**Family** - Piperaceae

**Parts used** - Fruit

**Action** - Stimulant, Carminative

சுவை - கார்ப்பு, தன்மை வெப்பம், பிரிவு - கார்ப்பு

பொதுகுணம்

இருமல் குன்மம் இரைப்பு கயப்பிணி
ஈளை பாண்டு சந்யாசம் அரோசகம்
பொருமல் ஊதை சிரப்பிணி மூர்ச்சைநோய்
பூரிக் குஞ்சல தோடம் பீலிகமும்
வரும லப்பெருக் கோடு மகோதரம்
வாதம் ஆதிமுத் தோடஞ் சுரங்குளிர்
பெருமாலைப்புரி மேகப் பிடகமும்
பேருந் திப்பிலிப் பேரங்குரைக்கவே

இதனால் குன்மம், ஐயப்பிணி, பாண்டு, சுவையின்மை, பொருமல், ஆகியவை போம

**9.Tamil name** - **இம்பூறல்**

**English name** - Dye root

**Botanical name** - Oldenlandia unbellata

**Family** - Rubiaceae

**Parts used** - Whole plant

**Action** - Cholagogue, Styptic

சுவை - இனிப்பு,தன்மை - சீதம், பிரிவு - இனிப்பு

பொதுகுணம்

இன்புறா வேரைஇதமாய் அருந்தினர்க்குப்
பின்புறா தையடிமாடு பித்தமுமே - துன்பம்
இருமல் சுவாசம் எரிசுரம்வ யிற்றுப்
பொருமலுப்பி சம்பறந்து போம்.

இதனால் உடலின் அழல், அழல்சுரம், வயிற்றிரைச்சல், விக்கல் முதலிய நோய்கள் போம்.

**10.Tamil name** - **வசம்பு**

**English name** - Sweet-flag

**Botanical name** - Acorus calamus

**Family** - Acoraceaea

**Parts used** - Bark

**Action** - Stimulant, Antiperiodic, Germicide, Disinfectant

சுவை - கார்ப்பு, தன்மை - வெப்பம், பிரிவு - கார்ப்பு

பொதுகுணம்

பாம்பாதி நஞ்சற் புதப்புண் வலிவிடபாகங் குன்மம்
சூம்பா ரிரத்தடித் தம்முக நாற்றம்வன் சூலைசன்னி
வீம்பாம்பை காசம் பீலீகஞ் சலிபதம் வீறிருமல்
தாம்பாங் கிருமி பிவையேகு மாசிவ சம்பினையே

இதனால் ஐவகைவலி, குன்மம், இரத்தபித்தம், சூலை, முப்பிணி, ஈரல் நோய்கள், யானைக்கால் ஆகியவை போம்.

**11.Tamil name** - **கருஞ்சீரகம்**

**English name** - Black cumin

**Botanical name** - Nigella sativa

**Family** - Ranunculaceae

**Parts used** - Seed

**Action** - Emollient, Carminative

சுவை - கைப்பு, தன்மை - வெப்பம், பிரிவு - கார்ப்பு

பொதுக்குணம்

கருஞ்சீ ரகத்தான் கரப்பனொடு புண்ணும்
வருஞ்சீராய்ப் பீநசமு மாற்றும் - அருந்தினால்
காய்ச்சல் தலைவலியுங் கண்வலியும் போமுலகில்
வாய்சச மருந்தெனவே வை

இதனால் உட்சூடு, இவைகளும், வயிற்றுப் பொருமல், குன்மம், மார்புவலி, வீக்கம், காமாலை ஆகியவை நீங்கும்.

**12.Tamil name** - **மருதோன்றி**

**English name** - Henna plant

**Botanical name** - Lawsonia innermis

**Family** - Lythraceae

**Parts used** - Root

**Action** - Astrigent

சுவை - துவர்ப்பு, தன்மை - வெப்பம், பிரிவு - கார்ப்பு

பொதுகுணம்:

கீல் வாயு, குடைச்சல், தலைநோய், கைகால் வலி, எரிச்சல்,

“இது வாதமடக்கியாகவும் வாதத்தைத் தீர்க்கவும் சிறந்த பயனுள்ள மருந்தாக இருக்கிறது என்று அனுபவ பூர்வமாக ஹொன்னி பெர்க்கர்.

**13. Tamil name** - **இந்துப்பு**

**English name** - Rock Salt

**Action** - Laxative , Anti inflammatory

பொதுகுணம்:

“அட்டகுன்ம மந்தம் அசிர்க்கரஞ்சூர் சீதபித்தம்
துட்டவையம் நாடிப்புண் போடங்கள் - கெட்டமலக்
கட்டுவிட விந்தையக் காமிய நோய் வன்கரப்பான்
விட்டுவிட விந்துப்பை விள்”

# INTERNAL MEDICINE - INGREDENTS

## KODIVELI CHOORANAM

பெருங்காயம்

மருதோன்றி வேர்

சுக்கு

கோஷ்டம்

ஓமம்

கொடிவேலி

வசம்பு

சந்தனம்

கருஞ்சீரகம்

தேவதாரம்

இந்துப்பு

திப்பிலி

இம்பூரல்

**EXTERNAL MEDICINE:**

**Tamil name** - **திருக்கள்ளி**

**English name** - Milk Hedge plant

**Botanical name** - Euphorbia tirucalli

**Family** - Euphorbiacea

பொதுகுணம்

வாத முடக்கலும் வன்கிரந்தி குட்டம் போஞ்
சீதமொழி யுங்கிருமி சேருமோ? - மாதெ!
பருகுபக்க நோயுடனே பாழ்ங்கரப்பான் நீருந்
திருகுக்கள்ளிப் பாலாற் றெளி

இதனால், வளிமுடக்குகள், பெருநோய், ஐயநோய், பக்கசூலை அவை போம்.

**2.Tamil name: vembu ennai**

**Botanical name** : azadirachta indica

**Family** : Meliaceae

**Parts used** : seed

**Suvai** : kaippu

**Thanmai** : veppam

**Pirivu** : karppu

**Chemical constituents:**

Nimbidiol,margocinin, margocilin, nimbilin,nimolinin,nimbolide.

**Action**

- Stimulant
- Antiseptic
- insecticide

**Uses**

Anti vatha disease, scabies, eczema,fever cured

# EXTERNAL MEDICINE – INGREDENTS

# THIRUGUKALLI ENNAI

திருகுக்கள்ளி

கொடிவேலி சூரணம்

திருகுக்கள்ளி எண்ணெய்

**EXTERNAL THERAPY:**

**1.Tamil name** - **பூண்டு**

**Boanical name** - Allium sativum

**Family** - liliaceae

**Part used** - bulb

**English name** - Garlic

பொதுகுணம்

சன்னியொரு வாதந் தலைநோவு தாள் வலி
மன்னிவரு நீர்க்கோவை வன்சீதம் - அன்னமே!
உள்ளுள்ளி கண்பாய் வளைமூல ரோகமும் போம்
வெள்ளுள்ளி தன்னால் வெருண்டு
இதை முப்பிணி வளிநோய்கள், நீரேற்றம் இவைகட்டு கொடுக்கலாம்.

**2.Tamil name** - **மிளகு**

**English name** - Peper

**Botanical name** - Piper nigram

**Family** - Piperaceae

**Parts used** - Fruit

**Action** - Rubefacient, Stimulant to skin, Resolvent

**Suvai** - kaippu,karppu

**Thanmai** - veppam

**Pirivu** - karppu

பொதுகுணம்

அளவையுறாக்காரம் அடைந்திருக்கும் வாத
விளைவையெல் லாமறுக்கும் மெய்யே - மிளகின்காய்
கண்டவர்க்கும் இன்பமாம் காரிகையே! சிழ்மூலங்
கொண்டவர்க்கு நன் மருந்தாங் கூறு
இது வளிநோய்களையும் சீழ்மூலத்தையும் நீக்கும்

**3.முருங்கை இலை**

பொதுகுணம்

செறிமந்தம் வெப்பந் தெறிக்குந் தலைநோய்
வெறிமூர்ச்சை கண்ணோய் விலகும் - மறமே
நெருங்கையிலை யொத்தவிழி நேரிழையே! நல்ல
முருங்கை யிலையை மொழி

**4.Tamil name** - **பெருங்காயம்**

**English name** – Asafoetida

**Botanical name** - Ferula asafoetida

**Fmaily** - Apiaceae

**Parts used** - Resin

சுவை - கைப்பு, கரகரப்பு / தன்மை - வெப்பம் பிரிவு - கார்ப்பு

பொதுகுணம்:

தந்தவே தந்த மூலத்தெழும்பிணி
சருவகாளம் விருச்சிகங்கீடம்மா
மந்தம்வாதம் உதாவர்த்தம் அல்குல்நோய்
மார்பணங்கட்ட குன்மம்மகோதரம்
உந்துகெர்ப்பந்தின வித்திரஞ்சூலைச்சூர்
உதிரப்பூச்சி சிலேத்துமத்துறும்வலி
வந்தமெய்க்கடுப் போடிவைமுற்றுமே
மாயுநாறுநற் காயங்கிடைக்கினே (தே.கு)

இதனால் மந்தம், ஏப்பம், வாதம், சூதகவாயு, குன்மம், பெருவயிறு, சூதகச்சூலை, குருதியிலுள்ள நுண்புழு, ஐயத்தால் பிறந்த வலிகள் உடல் கடுப்பு, என்னும்ம இவைகள்.

## EXTERNAL THERAPY - INGREDENTS

## MURUGAI SURASA OTTRADAM

முருங்கை இலை

தேங்காய் திருவல்

மிளகு

பூண்டு

## ANNEXURE II

## BIO – CHEMICAL ANALYSIS

## BIO – CHEMICAL ANALYSIS OF KODIVELI CHOORANAM

**Preparation of the extract:**

5gms of the drug was weighed accurately and placed in a 250ml clean beaker then 50ml distilled water is added and dissolved well. Then it is boiled well for about 10 minutes. It is cooled and filtered in a 100ml volumetric flask and then it is made to 100ml with distilled water. This fluid is taken for analysis.

**QUALITATIVE ANALYSIS**

| S.NO | EXPERIMENT | OBSERVATION | INFERENCE |
|---|---|---|---|
| **1.** | **Test for calcium:** 2ml of the above prepared extract is taken in a clean test tube. To this add 2 ml of 4%ammonium oxalate solution. | A white precipitate is formed. | Indicates the presence of calcium. |
| **2.** | **Test for sulphate:** 2ml of the extract is added to 5%bariumchloride solution. | A white precipitate is formed | Indicates the presence of sulphate. |
| **3.** | **Test for chloride:** The extract is treated with silver nitrate solution | No white Precipitate is formed. | Absence of Chloride |
| **4.** | **Test for carbonate:** The substance is treated with concentrated Hcl. | No brisk effervescence is formed | Absence of carbonate. |
| **5.** | **Test for Starch:** The extract is added with weak iodine solution. | Blue colour is formed | Indicates the Presence of starch. |

| | | | |
|---|---|---|---|
| **6.** | **Test for Ferric Iron:**<br>The extract is treated with concentrated glacial acetic acid and potassium ferro cyanide. | No blue colour is formed. | Absence of ferric iron. |
| **7.** | **Test of Ferrous Iron:**<br>The extract is treated with concentrated Nitric acid and ammonium thiocyanide solution. | No blood red Colour is formed. | Absence of ferrous iron. |
| **8.** | **Test for phosphate:**<br>The extract is treated with ammonium molybdate and concentrated nitric acid. | No yellow Precipitate is formed. | Absence of phosphate |
| **9.** | **Test for albumin:**<br>The extract is treated with Esbach's reagent. | No yellow precipitate formed. | Absence of albumin. |
| **10.** | **Test for Tannic acid:**<br>The extract is treated with ferric chloride. | Blue black precipitate is formed. | Indicates the presence of Tannic acid. |
| **11.** | **Test for unsaturation:**<br>Potassium permanganate solution is added to the extract. | It gets decolorised. | Indicates the Presence of unsaturated compound. |
| **12.** | **Test for the reducing sugar:**<br>5ml of Benedict's qualitative solution is taken in a test tube and allowed to boil for 2 minutes and added 8-10 drops of the extract and again boil it | No colour change occurs. | Absence of reducing sugar. |

| | | | |
|---|---|---|---|
| | for 2 minutes. | | |
| **13.** | **Test for amino acid:** One or two drops of the extract is placed on a filter paper and dried well. After drying,1% ninhydrin is sprayed over the same and dried it well. | Violet Colour is formed | Indicates the presence of amino acid. |
| **14.** | **Test for zinc:** The extract is treated with Potassium ferro cyanide. | No white Precipitate is formed | Absence of zinc. |

**Inference:**

The given sample of "KODIVELI CHOORANAM" contains calcium, Sulphate, Starch, tannic acid, unsaturated compound, and amino acid.

## ANNEXURE III

## FOURIER TRANSFORM INFRARED SPECTROSCOPY

**AIM**

To evaluate the FTIR characterization of Kodiveli chooranam

**PROCEDURE**

Fourier transform infrared spectroscopy it is n important and more advanced technique. It is used to identify the functional group to determine the quality and consistency of the sample material and can determine the amount of compound present in the sample.

The FTIR- Infrared is passed from a source through a sample. This infrared is absorbed by the sample according to the chemical properties and some are transmitted. The spectrum that appears denotes the molecular absorption and transmission. It forms the molecular finger print of the sample. It is recorded as wavelength and the peaks seen in the spectrum indicate the amount of material present.

**RESULT**

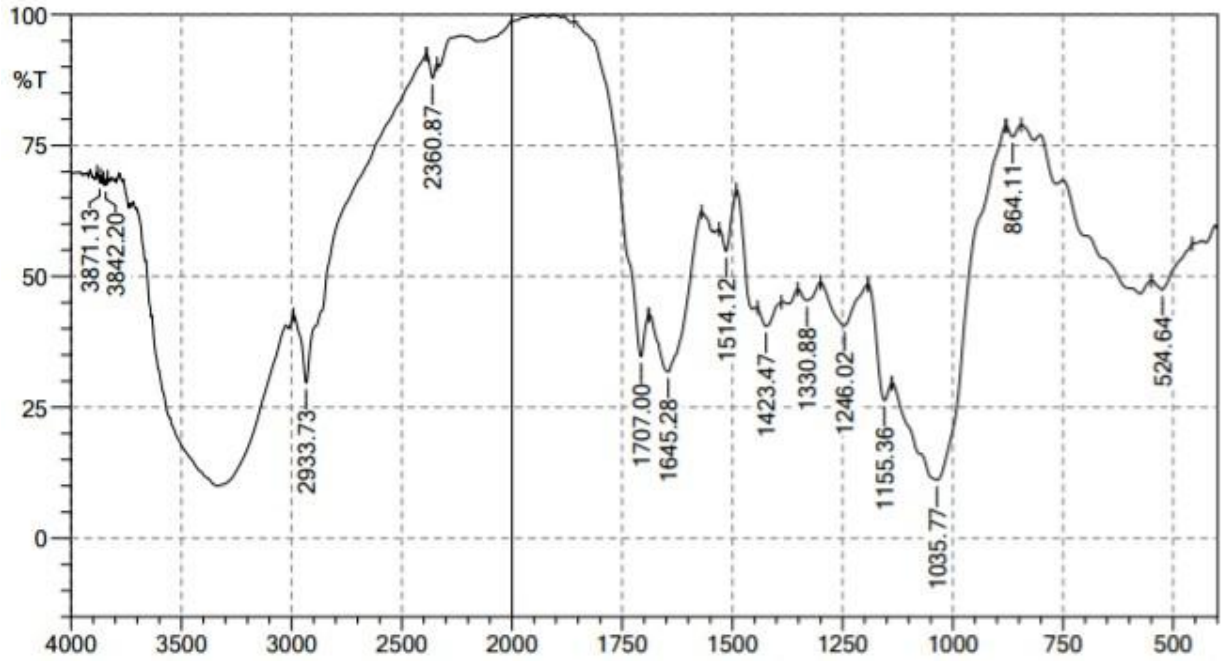


**Table 1.2**

**FTIR data interpretation of Kodiveli chooranam**

| Wave number | Vibrational modes of Kodiveli chooranam | Functional groups |
|---|---|---|
| 2933.73 | N-H Stretching | Amine salt |
| 1707.00 | C=O Stretching | Conjugated aldehyde |
| 1645.28 | N-H Bending | Amine |
| 1514.12 | N-O Stretching | Nitro compound |
| 1423.47 | C-H Bending | Alkane |
| 1330.88 | S=O Stretching | Sulfone |
| 1246.62 | C-N Stretching | Amine |
| 1155.36 | S=O Stretching | Sulfone |
| 1035.77 | S=O Stretching | Sulfoxide |
| 864.77 | - | Unknown |
| 524.64 | C-L Stretching | Halo compound |

**INFERENCE**

FTIR spectra analysis indicates the presence of some organic functional groups such as Halo compound, Sulfoxide, Sulfone, Amine, Fluro coumpound, Alkane, Nitro compound, Conjugated aldehyde, Aromatic coumpound, Amine salt and carboxylic cid. The presence of Sulfoxide, Sulfone, Amine, Sulfonamide are indicates that contains anti-inflammatory, analgesic, antibiotics, antisaeptic activities.

## ANNEXURE IV

## I ANTI-INFLAMMATORY

### ANTI-INFLAMMATORY ACTIVITYOF KODIVELI CHOORANAM

The anti-inflammatory activities of **KODIVELI CHOORANAM** at 100 mg/kg & 200 mg/kg doses were evaluated using carrageenan-induced paw edema method. The inflammation was readily produced in the form of edema with the help of irritant such as carrageenan. Carrageenan is a sulphated polysaccharide obtained from sea weed (Rhodophyceae) and when injected cause the release of prostaglandins by the way it produces inflammation and edema.

**REQUIREMENTS:**

Animal : Albino rat (180-200 g)

Drugs and chemicals : Carrageenan (1%w/v), Diclofenac sodium (standard),

Carboxy methyl cellulose (1%w/v),

Plethysmo meter.

Test compounds : KODIVELI CHOORANAM

**METHOD:**

Anti-inflammatory activity was performed by the following procedure of Bhandri et al(1) The animals were divided into 4 groups each having six animals. A freshly prepared suspension of carrageenan (1% w/v , 0.1 ml) was injected to the planter region of left hind paw of each rat. One group was kept as control and the animals of the other groups were pretreated with the KODIVELI CHOORANAM test Compounds dissolved with 2 ml sterile water given through orally and diclofenac 10mg/kg (ip) 30 min before the carrageenan treatment. The paw volumes of the test compounds, standard and control groups were measured at 60,240,360 minutes of carrageenan treatment with the help of plethysmometer . Mean increase in paw volume was measured and the percentage of inhibition was calculated.

*% Anti-inflammatory activity = (Vc-Vt / Vc) x 100*

Where, ***Vt***-mean increase in paw volume in rats treated with test compounds,

***Vc***-mean increase in paw volume in control group of rats.

**TABLE No.1**

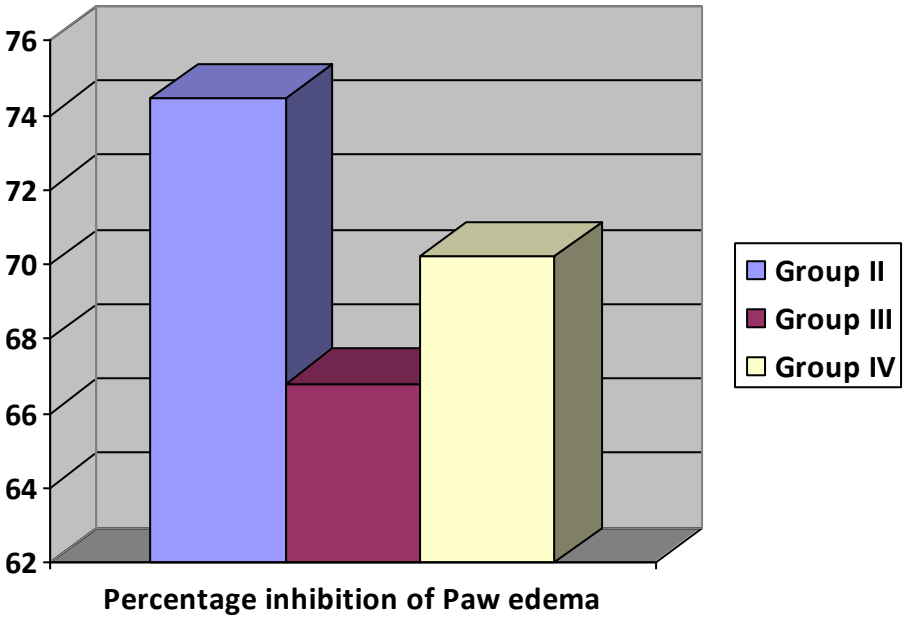
**ANTI-INFLAMMATORY ACTIVITY OF KODIVELI CHOORANAM**

| Treatment | Dose (mg/kg) | Paw volume(ml) as measured by mercury displacement at 6 hour | Percentage inhibition of paw edema |
|---|---|---|---|
| **Group I Normal saline** | 10ml/kg orally | 4.70±0.96 | - |
| **Group II Std** | 10mg/kg I.P.Diclofenac sodium | 1.20±0.40 | 74.46%*a |
| **Group III KODIVELI CHOORANAM** | 100mg/kg.Orally. | 1.56±0.48 | 66.80%*a |
| **Group IV KODIVELI CHOORANAM** | 200mg/kg.Orally. | 1.40±0.52 | 70. 21%*a |

* Data are expressed as Mean ± S.E.M.

*Data were analyzed by one way ANOVA followed by Newman's keul's multiple range tests, to determine the significance of the difference between the control group and rats treated with the test compounds.

*a Values were significantly different from normal control at P< 0.01.




## RESULTS

### Anti- inflammatory activity

KODIVELI CHOORANAM at doses 100mg/kg & 200mg/kg were tested for their Anti- inflammatory activity by using carrageenan Induced rat paw edema method and the results are tabulated in table no 1. The results reveals that KODIVELI CHOORANAM at 100mg/kg & 200mg/kg doses possesses significant Anti- inflammatory activity when compared to control group at $p<0.01$.

## ANNEXURE IV

## 1I. ANALGESIC ACTIVITY

## ANALGESIC ACTIVITY OF KODIVELI CHOORANAM

### Hot plate method

### Animals

Young wister albino rats of either sex aged 4-5 weeks, average weight 100-150 gm were used for the experiment. The rat were purchased from the animal TANVASA. They were kept in standard environmental condition (at 24.0±0°C temperature and 55-65% relative humidity and 12 hour light/12 hour dark cycle) for one week for acclimation after their purchase and fed ICDDRB formulated rodent food and water ad libitum. The set of rules followed for animal experiment were approved by the institutional animal ethical committee. (Zimmerman,1893).

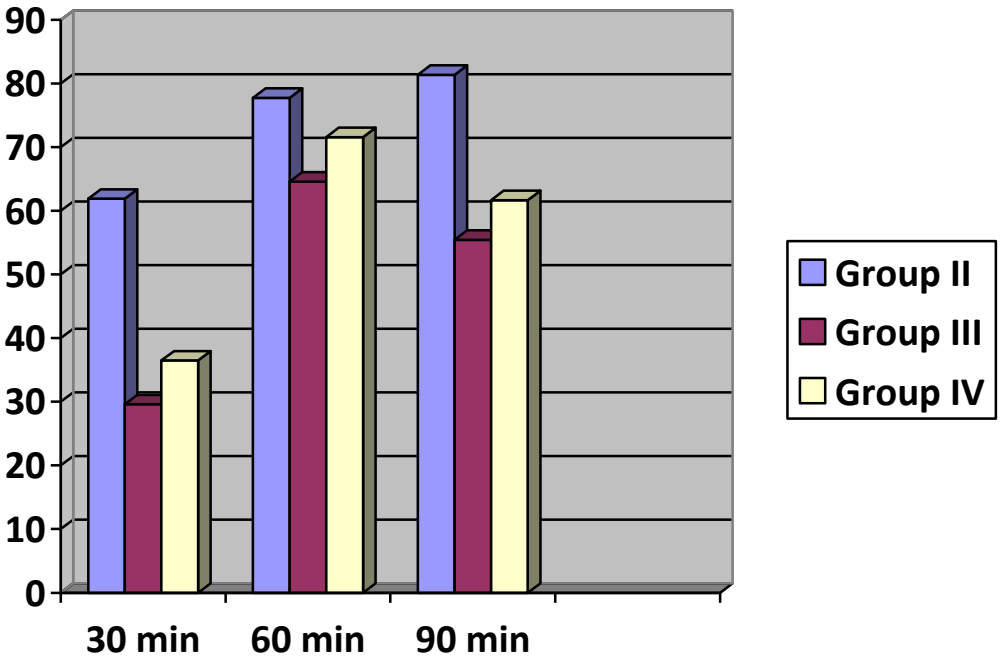
Experimental animals of either sex were randomly selected and divided into four groups designated as group-I, group-II, group-III and group-IV consisting of five Rats in each group for control, positive control and test sample group respectively. Each group received a particular treatment i.e. control (1% Tween-80 solution in water, 10ml/kg, p.o.), positive control (Diclofenac sodium 10 mg/kg, p.o.) and the test sample (drug of 100mg/kg , p.o. & 200mg/kg, p.o. respectively). The animals were positioned on Eddy's hot plate kept at a temperature of 55±0.5 0C. A cut off period of 15 s (Franzotti et al., 2000) was observed to avoid damage to the paw. Reaction time was recorded when animals licked their fore or hind paws, or jumped prior to and 0, 30, 60 and 90 min after oral administration of the samples (Eddy *et al.*, 1953; Kulkarni, 1999; Toma *et al.*, 2003).

### Statistical analysis

The results of statistical analysis for animal experiment were expressed as mean ± SEM and were evaluated by ANOVA followed by Dunnet's multiple comparisons. The results obtained were compared with the vehicle control group. The $p<0.05$, 0.001 were considered to be statistically significant.

**TABLE NO.1**

| GROUP | DOSE | Mean latency before and after administration | | | | % inhibition | | |
|---|---|---|---|---|---|---|---|---|
| | | 0Min | 30Min | 60Min | 90Min | 30 Min | 60 Min | 90 Min |
| Group I | Vehicle | 1.76± 0.220 | 1.95± 0.226 | 1.66± 0.198 | 2.08± 0.267 | - | - | - |
| Group II Diclofenac | 10 | 1.84± 0.088 | 5.12± 0.625 | 7.47± 0.645 | 11.17± 1.008 | 61.91 | 77.77 | 81.37 |
| Group III Kodiveli Chooranam | 100 | 1.71± 0.074 | 2.77± 0.265 | 4.69± 0.776 | 4.67± 0.617 | 29.60 | 64.60 | 55.46 |
| Group IV Kodiveli Chooranam | 200 | 1.57± 0.018 | 3.07± 0.852 | 5.84± 0.514 | 5.43± 0.465 | 36.48 | 71.57 | 61.69 |



**Result**

Results of hotplate test are presented in Table  for drugs respectively. The drug were found to exhibit a dose dependent increase in latency time when compared with control. At 90 minutes, the percent inhibition of two different doses (100 and 200 mg/kg body weight) was 55.46%&61.69% respectively. The results were found to be statistically significant ($p<0.001$).

**Discussion**

Siddha is the first system of medicine to emphasize health as the perfect state of physical, psychological, social and spiritual components of a human being. The fundamental principle of this medicine successfully eliminates the evil side effects without losing the beneficial medicinal properties. Diclofenac was used as a reference drug in the current study as it has both central, peripheral actions and can significantly treat nociceptive pain as in this model.  In the current study, pain threshold increased significantly during the period of observation in all the drug treated groups, with maximum effect observed in the  Kodiveli chooranam  at a dose of 100mg/kg as shown in table 1. The analgesic activity of drug was comparable to diclofenac at 30, 60,120minutes appears to be a significant finding and suggests that this drug has a slow onset of analgesic action

**CONCLUSION:**

KODI VELI CHOORANAM possess significant analgesic and anti-inflammatory potential as evidenced from the present preclinical study. These findings support the use of Kodiveli chooranam  in traditional system of medicine for the management of pain and inflammatory conditions. Further studies are needed to be carried out in other animal models of pain and inflammatory to validate its efficacy and to identify the active phyto constituents in the formulation and their targets in pain and inflammatory pathways.

# TOXICITY STUDIES

## EVALUATION OF ACUTE TOXICITY STUDY OF

### Effect of Acute Toxicity Study (14 Days) of KODIVELI CHOORANAM

**Table no –1**

**Physical and behavioral examinations.**

| Group no. | Dose(mg/kg) | Observation sign | No. of animal affected. |
|---|---|---|---|
| Group-I | 5mg/kg | Normal | 0 of 3 |
| Group- II | 50mg/kg | Normal | 0 of 3 |
| Group-III | 300mg/kg | Normal | 0 of 3 |
| Group-IV | 1000mg/kg | Normal | 0 of 3 |
| Group-V | 2000mg/kg | Normal | 0 of 3 |

**Table no-2**

**Home cage activity**

| Functional and Behavioural observation | Observation | 5mg/kg Group (G-I) | 50mg/kg (G-II) | 300mg/kg (G-III) | 1000mg/kg (G-IV) | 2000mg/kg (G-V) |
|---|---|---|---|---|---|---|
| | | Female n=3 | Female n=3 | Female n=3 | Female n=3 | Female n=3 |
| Body position | Normal | 3 | 3 | 3 | 3 | 3 |
| Respiration | Normal | 3 | 3 | 3 | 3 | 3 |
| Clonic involuntary Movement | Normal | 3 | 3 | 3 | 3 | 3 |
| Tonic involuntary Movement | Normal | 3 | 3 | 3 | 3 | 3 |
| Palpebral closure | Normal | 3 | 3 | 3 | 3 | 3 |
| Approach response | Normal | 3 | 3 | 3 | 3 | 3 |
| Touch response | Normal | 3 | 3 | 3 | 3 | 3 |
| Pinna reflex | Normal | 3 | 3 | 3 | 3 | 3 |
| Tail pinch response | Normal | 3 | 3 | 3 | 3 | 3 |

## Table no-3

## Hand held observation

| Functional and Behavioral observation | Observation | Control | 5 mg/kg (G-I) | 50 mg/kg (G-II) | 300mg/kg (G-III) | 1000mg/kg (G-IV) | 2000mg/kg (G-V) |
|---|---|---|---|---|---|---|---|
| | | Female n=3 | Female n=3 | Female n=3 | Female n=3 | Female n=3 | Female n=3 |
| Reactivity | Normal | 3 | 3 | 3 | 3 | 3 | 3 |
| Handling | Normal | 3 | 3 | 3 | 3 | 3 | 3 |
| Palpebral closure | Normal | 3 | 3 | 3 | 3 | 3 | 3 |
| Lacrimation | Normal | 3 | 3 | 3 | 3 | 3 | 3 |
| Salivation | Normal | 3 | 3 | 3 | 3 | 3 | 3 |
| Piloerection | Normal | 3 | 3 | 3 | 3 | 3 | 3 |
| Pupillary reflex | Normal | 3 | 3 | 3 | 3 | 3 | 3 |
| Abdominal tone | Normal | 3 | 3 | 3 | 3 | 3 | 3 |
| Limb tone | Normal | 3 | 3 | 3 | 3 | 3 | 3 |

**Table no-4**

**Mortality**

| Group no | Dose no(mg/kg) | Mortality |
|---|---|---|
| Group-I | 5(mg/kg) | 0 of 3 |
| Group-II | 50(mg/kg) | 0 of 3 |
| Group-III | 300(mg/kg) | 0 of 3 |
| Group-IV | 1000(mg/kg) | 0 of 3 |
| Group-V | 2000(mg/kg) | 0 of 3 |

**RESULT:**

From acute toxicity study it was observed that the administration of KODIVELI CHOORANAMat a dose of 2000 mg/kg to the rats do not produce drug-related toxicity and mortality. So No-Observed-Adverse-Effect- Level (NOAEL) of KODIVELI CHOORANAM is 2000 mg/kg.

**DISCUSSION**

KODIVELI CHOORANAMwas administered single time at the dose of 5mg/kg, 50mg/kg , 300mg/kg, 1000mg/kg and 2000mg/kg to rats and observed for consecutive 14 days after administration. Doses were selected based on the pilot study and literature review. All animals were observed daily once for any abnormal clinical signs. Weekly body weight and food consumption were recorded. No mortality was observed during the entire period of the study. Data obtained in this study indicated no significance physical and behavioral signs of any toxicity due to administration of KODIVELI CHOORANAMat the doses of 5mg/kg,50mg/kg , 300mg/kg, 1000mg/kg and 2000mg/kg to rats.

At the 14th day, all animals were observed for functional and behavioral examination. In functional and behavioral examination, home cage activity, hand held activity were observed. Home cage activities like Body position, Respiration, Clonic involuntary movement, Tonic involuntary movement, Palpebral closure, Approach response, Touch response, Pinna reflex, Sound responses, Tail pinch response were observed. Handheld activities like Reactivity, Handling, Palpebral

closure, Lacrimation, Salivation, Piloercetion, Papillary reflex, abdominaltone, Limb tone were observed. Functional and behavioral examination was normal in all treated groups.Food consumption of all treated animals was found normal as compared to normalgroup.

Body weight at weekly interval was measured to find out the effect of KODIVELI CHOORANAMon the growth rate. Body weight change in drug treated animals was found normal.

## SUB-ACUTE TOXICITY STUDY IN WISTAR RATS TO EVALUATE TOXICITY PROFILE OF KODIVELI CHOORANAM

**Table :1**

**EFFECT OF SUB- ACUTE DOSE (28 DAYS)OF KODIVELI CHOORANAMONBODY WEIGHT IN GRAM**

| GROUP | CONTROL | LOW | MID | HIGH |
|---|---|---|---|---|
| 1st day | 124.3±1.03 | 127±1.543 | 126.3±2.231 | 128.3±2.23 |
| 7th day | 134.3±1.03 | 133.3±1.343 | 133±2.113 | 139±2.11 |
| 14th day | 136.1±1.004 | 104.3±1.12 | 104.4±2.012 | 105.4±2.012 |
| 21st day | 105.3±2.120 | 112.2±1.501 | 106±1.131 | 107±1.13 |
| 28th day | 115.3±1.041 | 114.3±1.202 | 145±2.0405 | 148±2.040 |

Values are expressed as mean ± SEM Statisticalsignificance (p) calculated by one way ANOVA followed by Dennett's(n=6); $^{ns}p>0.05$, *p<0.05, **p<0.01, ***p<0.001, calculated by comparing treated groupswith control group.

**EFFECT OF SUBACUTE DOSE (28 DAYS)OF KODIVELI CHOORANAM**

**Table : 2**

**KODIVELI CHOORANAMON ORGAN WEIGHT (PHYSICAL PARAMETER) IN GRAM**

| GROUP | | CONTROL | LOW | MID | HIGH |
|---|---|---|---|---|---|
| HEART | | 0.63±0.02 | 0.44±0.04 | 0.51±0.11 | 0.61±0.02 |
| LIVER | | 2.51± 0.23 | 2.53±0.23 | 2.40±0.01 | 2.43± 0.23 |
| LUNGS | | 1.51±0.10 | 0.51±0.14 | 0.70±0.24 | 1.63±0.10 |
| KIDNEY | L | 0.63±0.02 | 1.72±0.03 | 0.63±0.02 | 0.61±0.02 |
| | R | 0.61±0.024 | 1.34±0.02 | 0.61±0.024 | 0.62±0.024 |

Values are expressed as mean ± SEM Statisticalsignificance (p) calculated by one way ANOVA followed by Dennett's(n=6); $^{ns}p>0.05$, *p<0.05, **p<0.01, ***p<0.001, calculated by comparing treated groupswith control group.

**Table no: 3**

**EFFECT OF SUB- ACUTE DOSE (28 DAYS)OFKODIVELI CHOORANAMONHAEMATOLOGICAL PARAMETERS**

| Drug treatment | RBC million cells/cmm | WBC cells/cmm | Haemoglobingm % | Differential count % | | | |
|---|---|---|---|---|---|---|---|
| | | | | Neutophils | Eosinophils | Monocyte | Limpocyte |
| Control | 5.41±0.40 | 6272.41±23.32 | 12.60±0.45 | 43.27±1.20 | 3.73±0.11 | 0.65±0.15 | 25.13±3.32 |
| LOW | 5.67±0.20 | 66354.04±23.22 | 12.20±0.43 | 47.54±1.41 | 2.30±0.14 | 0.32±0.30 | 25.22±3.51 |
| MID | 5.53±0.21 | 6324.25±32.35 | 12.11±1.03 | 42.32±2.22 | 3.64±0.12 | 0.52±0.40 | 25.13±3.32 |
| HIGH | 5.36±0.21 | 6498.25±32.35 | 12.11±1.03 | 40.32±2.22 | 3.70±0.12 | 0.54±0.40 | 26.13±3.32 |

Values are expressed as mean ± SEM Statisticalsignificance (p) calculated by one way ANOVA followed by Dennett's(n=6); $^{ns}p>0.05$, *p<0.05, **p<0.01, ***p<0.001, calculated by comparing treated groupswith control group.

**EFFECT OF SUB- ACUTE DOSE(28 DAYS)OF KODIVELICHOORANAMON BIOCHEMICAL PARAMETERS**

**Table No: 4**

| Drug Treatment | SGPT (IU/L) | SGOT (IU/L) | ALT (IU/L) | Urea (mg/dl) | Creatinine (mg/dl) |
|---|---|---|---|---|---|
| Control | 34.14±3.02 | 44.24±4.31 | 243.12±11.32 | 57.35±3.00 | 0.74±0.03 |
| LOW | 34.13±3.22 | 43.23±4.01 | 25.11±12.42 | 52.53±2.42 | 0.70±0.04 |
| MID | 32.21±4.44 | 46.31±2.21 | 24.45±4.14 | 51.12±2.22 | 0.65±0.04 |
| HIGH | 34.21±4.44 | 42.31±2.21 | 23.45±4.14 | 52.12±2.22 | 0.66±0.04 |

**EFFECT OF SUB- ACUTE DOSE (28 DAYS) OFKODIVELI CHOORANAMBIOCHEMICAL PARAMETERS**

**Table no: 5**

| GROUP | CONTROL | KODIVELI CHOORANAM (200mg/kg) | KODIVELI CHOORANAM (400mg/kg) | KODIVELI CHOORANAM (600mg/kg) |
|---|---|---|---|---|
| TOTAL BILIRUBIN (mg/dl) | 0.5±0.27 | 0.45±0.827 | 0.8198±0.3376 | 0.99±0.199 |

Values are expressed as mean ± SEM Statisticalsignificance (p) calculated by one-way ANOVA followed by Dennett's(n=6); $^{ns}p>0.05$, *p<0.05, **p<0.01, ***p<0.001, calculated by comparing treated groupswith control group.

**Table no: 6**

**EFFECT OF SUB- ACUTE DOSE (28 DAYS) OF ERANDAMOOLA CHOORANAMON FOOD INTAKE IN GRAM**

| GROUP | CONTROL | L | M | H |
|---|---|---|---|---|
| 1st DAY | 21.33±13.6110 | 22.1672±15.3 | 15.10±22.71 | 20.5±8.62 |
| 7th DAY | 18.5±12. | 13.863±13.67 | 19.73±10.853 | 14.17±15.41 |
| 14th DAY | 21.83±8.72 | 13.83±15.28 | 13±14.96 | 22.72±9.981 |
| 21st DAY | 14.87±13.4 | 18±8.466 | 18.88±10.43 | 22.17±9.02 |
| 28th DAY | 15.10±11.38 | 21.38±11.50 | 13±8.90 | 13±7.57 |

Values are expressed as mean ± SEM Statisticalsignificance (p) calculated by one-way ANOVA followed by Dennett's(n=6); $^{ns}p>0.05$, *p<0.05, **p<0.01, ***p<0.001, calculated by comparing treated groupswith control group

**Table no: 7**

**Effect of Sub- Acute Dose (28 Days) Of KODIVELI CHOORANAM On Water Intake in ml**

| GROUP | CONTROL | KODIVELI CHOORANAM (200mg/kg) | KODIVELI CHOORANAM (400mg/kg) | KODIVELI CHOORANAM (600mg/kg) |
|---|---|---|---|---|
| 1st DAY | 98.38±13.50 | 89.12±14.426 | 102.10±21.99 | 67.5±7.03 |
| 7th DAY | 85.5±11.78 | 100.863±12.70 | 76.73±9.863 | 81.7±14.50 |
| 14th DAY | 58.83±8.72817 | 90.63±14.812 | 80±13.92 | 89.12±8.981 |
| 21st DAY | 91.687±12.49 | 85±8.462 | 65.88±9.450 | 89.1717±8.792 |
| 28th DAY | 82.10±11.40 | 88.38±11.54 | 80±8.961 | 70±7.53 |

Values are expressed as mean ± SEM Statisticalsignificance (p) calculated by one-way ANOVA followed by Dennett's(n=6); $^{ns}p>0.05$, *p<0.05, **p<0.01, ***p<0.001, calculated by comparing treated groupswith control group

**Table no:8**

**EFFECT OF SUB ACUTE DOSES (28 DAY) OF KODIVELI CHOORANAMONELECTROLYTES: -**

| GROUP | CONTROL | KODIVELI CHOORANAM (200mg/kg) | KODIVELI CHOORANAM (400mg/kg) | KODIVELI CHOORANAM (600mg/kg) |
|---|---|---|---|---|
| Sodium (mg/dl) | 145.10±0.55 | 149.30±0.92 | 151±0.7571 | 141.80±0.70 |
| Calcium(mg/dl) | 10.580±0.139 | 9.20±0.783*** | 7.7±0.199*** | 8.180±0.1* |
| Phosphorus (Mg/dl) | 4.278±0.17 | $5.3010\pm0.15^{ns}$ | $6.35630\pm1^{s}$ | 6.037±0.02* |

Values are expressed as mean ± SEM Statisticalsignificance (p) calculated by one-way ANOVA followed by Dennett's(n=6); NS- non-significant, *p<0.05, **p<0.01, ***p<0.001,

## RESULTS:

### CLINICAL SIGNS:

All animals in this study were free of toxic clinical signs throughout the dosing period of 28 days.

### Mortality:

All animals in control and in all the treated dose groups survived throughout the dosing period of 28 days.

### Body weight:

Results of body weight determination of animals from control and different dose groups exhibited comparable body weight gain throughout the dosing period of 28 days.

### Food consumption:

During dosing and the post-dosing recovery period, the quantity of food consumed by animals from different dose groups was found to be comparable with that by control animals.

**Organ Weight:**

Group Mean Relative Organ Weights (% of body weight) are recorded in Table No.22 Comparison of organ weights of treated animals with respective control animals on day 29 was found to be comparable similarly.

**Hematological investigations:**

The results of hematological investigations conducted on day 29 revealed following significant changes in the values of different parameters investigated when compared with those of respective controls; however, the increase or decrease in the values obtained was within normal biological and laboratory limits or the effect was not dose dependent.

**Biochemical Investigations:**

Results of Biochemical investigations conducted on the day 29th and recorded in Table no 24, 25 revealed the following significant changes in the values of hepatic serum enzymes studied. When compared with those of respective control. However, the increase or decrease in the values obtained was within normal biological and laboratory limits.

**INTERPRETATION**:

1) All the animals from control and all the treated dose groups up to 15ml/kg survived throughout the dosing period of 28 days.
2) No signs of toxicity were observed in animals from different dose groups during the dosing period of 28 days.
3) Animals from all the treated dose groups exhibited comparable body weight gain with that of controls throughout the dosing period of 28 days.
4) Food consumption of control and treated animals was found to be comparable throughout the dosing period of 28 days
5) Haematological analysis conducted at the end of the dosing period on day 29th, revealed no abnormalities attributable to the treatment.
6) Biochemical analysis conducted at the end of the dosing period on day $29^{th}$, no abnormalities attributable to the treatment.
7) Organ weight data of animals sacrificed at the end of the dosing period was found to be comparable with that of respective controls.

## ANNEXURE – V

## ASSESMENT FORMS

**FORM I** **:** Screening form

**FORM II** **:** Consent form

**FORM III** **:** History Proforma on enrollment

**FORM IV** **:** Clinical Assessment on enrollment and on visit

**FORM V** **:** Laboratory Investigation form

**FORM VI** **:** Drug compliance Form

**FORM VII** **:** Adverse drug reaction Form

**FORM VIII** **:** Withdrawal form

**GOVERNMENT SIDDHA MEDICAL COLLEGE & HOSPITAL,**

**PALAYAMKOTTAI, TIRUNELVELI DISTRICT.**

**DEPARTMENT OF SIRAPPU MARUTHUVAM**

AN OPEN NON- RANDOMIZED PHASE II CLINICAL TRIAL TO EVALUATE THE THERAPEUTIC EFFICACYOF **KODIVELI CHOORANAM**[INTERNAL] AND **THIRUGUKALLI YENNAI** [EXTERNAL] WITH **OTRADAM** [EXTERNAL THERAPY] IN **SANTHUVATHAM** [POLYARTHRITIES].

**FORM-I**

**(SCREENING AND SELECTION PROFORMA)**

**1. OPD/IPD No. ——————— 2. Date: ———————3. SI. No. . ———————**

**4.Name_____ 5.Age: _____ 6. Gender:_____ 7.Phone no:**_____

**INCLUSION CRITERIA:**

- Age : between 20- 70 years
- Sex : Both male and female
- Joints pain : more than 5 joints
- Swelling
- Stiffness
- Restricted movements in affected joint.
- Willing for admission and study in IPD for 30-40 days or willing to attend OPD

**EXCLUSION CRITERIA:**

- Rheumatoid arthritis
- Other systemic illness
- Gout
- Malignancy
- Pregnancy women and Lactating mother
- Tuberculosis

**WITHDRAWAL CRITERIA:**

1. Intolerance to the drug and development of adverse reactions during drug trial.
2. Poor patient compliance and defaulters.
3. Patient turned unwilling to continue in the course of clinical study.
4. Occurrence of any serious illness during the course of study.

DATE :

STATION : Signature of the Investigator

**SIGNATURE OF THE GUIDE / HOD**

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**DEPARTMENT OF SIRAPPU MARUTHUVAM**

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**FORM-II**

**CONSENT FORM**

**Certificate by Investigator**

I certify that I have disclosed all details about the study in the terms readily understood by the patient.

Date: ……..  Signature of the

Signature of the Investigator: ……  Guide/HOD: …….

Name: ……..  Name: ……..

Consent by Patient

I have been informed to my satisfaction, by the attending physician, the purpose of the clinical trial, and the nature of drug treatment and follow-up including the laboratory investigations to be performed to monitor and safeguard my body functions.

I am aware of my right to withdraw from the trial at any time during the course of the trial without having to give the reasons for doing so.

I, exercising my free power of choice, hereby give my consent to be included as a clinical trial of KODIVELI CHOORANAM[INTERNAL] AND THIRUGUKALLI YENNAI [EXTERNAL] WITH OTRADAM [EXTERNAL THERAPY] IN SANTHUVATHAM [POLYARTHRITIES].

Date: ……..  Signature: ……

Name: …….

Date: …….  Signature of Witness: …….

Name…….. ……

Relationship: …….

**அரசினர் சித்த மருத்துவக் கல்லூரி மற்றும் மருத்துவமனை**

**பாளையங்கோட்டை**

**பட்டமேற்படிப்பு சிறப்பு மருத்துவத்துறை**

**‘கொடிவேலிசூரணம்”மற்றும் ‘திருகுகள்ளி எண்ணெய்” இவற்றின் பரிகரிப்புத் திறனைக் கண்டறியும் மருத்துவ ஆய்வுஒப்புதல் படிவம் ஆய்வாளரால் சான்றளிக்கப்பட்டது.**

நான் இந்த ஆய்வைக் குறித்த அனைத்து விபரங்களையும் நோயாளிக்கு புரியும் வகையில் எடுத்துரைத்தேன் என உறுதியளிக்கிறேன்.

தேதி : கையொப்பம்:

இடம் : பெயர்:

**நோயாளியின் ஒப்புதல்**

என்னிடம் இந்த மருத்துவ ஆய்வின் காரணத்தையும் மருந்தின் தன்மை மற்றும் மருத்துவ வழிமுறையைப் பற்றியும் தொடர்ந்து எனது உடல் இயக்கத்தை கண்காணிக்கவும், அதனைப் பாதுகாக்கவும் பயன்படும் மருத்துவ ஆய்வுக் கூட பரிசோதனைகள் பற்றியும் திருப்தி அளிக்கும் வகையில் ஆய்வு மருத்துவரால் விளக்கிக் கூறப்பட்டது.

நான் இந்த மருத்துவ ஆய்வின் போது காரணம் எதுவும் கூறாமல் எப்பொழுது வேண்டுமானாலும் இந்த ஆய்விலிருந்து என்னை விடுவித்துக் கொள்ளும் உரிமையை தெரிந்திருக்கின்றேன்.

நான் என்னுடைய சுதந்திரமாகத் தேர்வு செய்யும் உரிமையைக் கொண்டு **சந்துவாதம்** என்னும் நோய்க்கான **கொடிவேலிசூரணம்** மற்றும் **திருகுகள்ளி எண்ணெய்** ஆகியவற்றின் பரிகரிப்புத் திறனைக் கண்டறியும் மருத்துவ ஆய்விற்கு என்னை உட்படுத்த ஒப்புதல் அளிக்கிறேன்.

தேதி : கையொப்பம்:

இடம் : பெயர் :

சாட்சிக்காரர்கையொப்பம்:

பெயர் :

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**FORM III**

**HISTORY PROFORMA ON ENROLLMENT**

1. Serial No of the case: _____ 2. OPD/IPD No:_____

3.Name: _____ 4. Gender: ☐

5. Age (years): _____ DOB ☐☐ ☐☐ ☐☐☐☐

Date Month Year

6. Address: ----------

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7. A. Occupation: ---------- B. Income ----------

8. Educational Status: A) Illiterate ☐ B)Literate ☐

9. Height: ---------- cm 10.Weight:----------kg

11. Complaints and Duration:

12. Past History

Hypertension _____

Diabetes mellitus _____

Asthma _____

PT _____

Other _____

13. HABITS

A) Smoking : 1. Yes ☐ duration _____ years; Number - _____ 2. No ☐

B) Alcoholism:1. Yes ☐ duration _____ years; Quantity- ____ ml 2. No ☐

C) Tobacco chewing: 1. Yes ☐ duration _____ years 2.No ☐

D) Betel chewing : 1. Yes ☐ duration _____ years 2.No ☐

14. Dietary style: A.Pure vegetarian ☐ B.Non-vegetarian ☐ C. Mixed diet ☐

15. Drug history: Had the patient been treated before with allopathy drug?

A) Yes ☐ 2) No ☐

16 Marital status **:**1.Married ☐ 2.Unmarried ☐

17. Family history :

Whether this problem runs in family? 1. Yes ☐ 2.No ☐

(If yes, mention the relationship)

18. Bowel habits & micturition: Normal ☐ Abnormal ☐

(Details of an abnormality)

19. Psychological state: Normal ☐ Anxiety ☐ Depression ☐

**Signature of the Investigator** **Signature of the Guide/HOD**

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**FORM IV**

**CLINICAL ASSESSMENT ON ENROLLMENT AND ON VISITS**

1. S.No: _____
2. OPD/IPD No: _____
3. Name**:** _____
4. Gender : _____
5. Date of assessment: _____

**SIDDHA SYSTEM OF EXAMINATION**

**I. ENVAGAI THERVU: [EIGHT-FOLD EXAMINATION]**

Naadi: [pulse perception]

Naa:[tongue]

Niram: [complexion]

Mozhi: [voice]

Vizhi: [eyes]

Malam: [bowel habits / stools]

Moothiram:

Sparisam: [palpatory perception]

**2. NEER KURI:**

Niram:

Edai:

Nurai:

Enjal:

Manam:

**III. NEI KURI**

**5. THEGI: [ TYPE OF BODY CONSTITUTION]**

**6.NILAM: [ LAND WHERE PATIENT LIVED MOST]**

Kurinji ☐ Mullai ☐ Marutham ☐ Neithal ☐ Palai ☐

(Hilly terrain) (Forest range) (Plains) (Coastal belt) (Arid regions)

**7. KAALAM:**

Kaarkalam - ☐ Pinpanikalam - ☐

Koothirkalam - ☐ Ilavenil - ☐

Munpanikalam - ☐ Muthuvenil - ☐

**8. GUNAM:**

Sathuvam - ☐ Rasatham - ☐ Thamasam - ☐

**9.IMPORIGAL (SENSORY ORGANS)**

Mei

Vai

Kan

Mooku

Sevi

**10. KANMENDRIYAM ( MOTOR ORGANS)**

Kai

Kaal

Vaai

Eruvai

Karuvai

**11.KOSANGAL(Sheath)**

| | **0th Day** | **48th Day** |
|---|---|---|
| AnnamayaKosam | | |
| Pranamayakosam | | |
| Manomayakosam | | |
| Vignanamayakosam | | |
| Ananthamayakosam | | |

**12. MUKKUTRAM:[AFFECTION OF THREE HUMORS]**

**A)VATHAM:**

Praanan

Abaanan

Viyaanan

Udhaanan

Samanan

Naagan

Koorman

Kirugaran

Dhevathathan

Dhananjeyan

**B) PITHAM:**

Analpitham

Ranjagam

Sathagam

Prasagam

Aalosagam

**C) KABHAM:**

Avalambagam

Kilethagam

Pothagam

Tharpagam

Santhigam

**13.UDAL THATHUKAL[SEVEN DHATHUS]:**

Saaram

Seneer

Oon

Koluppu

Enbu

Moolai

Sukilam/Suronitham

**14.GENERAL EXAMINATION**

Consciousness **:**

Position **:**

Attitude **:**

Pulse Rate **:**

Heart Rate **:**

Temperature **:**

Respiratory Rate **:**

Blood Pressure **:**

Anaemia **:**

Jaundice **:**

Cyanosis **:**

Clubbing **:**

Oedema **:**

Significant Lymph adenopathy **:**

**15.SYSTEMIC EXAMINATION:**

Central Nervous System

Cardio vascular system

Respiratory system

Gastro intestinal system

Genito urinary system

**OVERALL ASSESSMENT CRITERIA OF THE STUDY**

| S.NO | SIGNS AND SYMPTOMS | BEORE TREATMENT | ATER TREATMENT |
|---|---|---|---|
| 1 | PAIN | | |
| 2 | SWELLING | | |
| 3 | REDNESS | | |
| 4 | TENDERNESS | | |
| 5 | JOINT STINESS | | |
| 6 | JOINT DEORMITY | | |
| 7 | LOSS O JOINT RANGE OF MOTION | | |

**Signature of the Investigator : Signature of the Guide / HOD**

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**FORM V**

**LABORATORY INVESTIGATION FORM**

S.NO : OP/IP NO:

NAME: AGE: SEX:

**I.BLOOD**

| | | **Before Treatment** | **After Treatment** |
|---|---|---|---|
| 1 | TC (cells/mm) | | |
| 2 | DC | | |
| 3 | ESR(mm) | | |
| 4 | Hemoglobin | | |
| 5 | Blood glucose | | |
| 6 | Blood urea / creatinine | | |
| 7 | Serum cholesterol | | |

**II. URINE**

| | | Before Treatment | After Treatment |
|---|---|---|---|
| 1 | Albumin | | |
| 2 | Sugar | | |
| 3 | Deposit | | |

**SPECIAL INVESTIGATION:**

RA FACTOR :

CRP :

Date :

Station :

**Signature of the Investigator :**

**Signature of the Guide /HOD**

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**FORM VI**

**(DRUG COMPLIANCE FORM)**

OPD/ IPD No : _____ DOA : _____

Name : _____ Age/ Sex : _____ S. No : _____

Name Of The Drug : **KODIVELI CHOORANAM**

| S.NO | DATE | MORNING | SIGN |
|---|---|---|---|
| **1.** | | | |
| **2.** | | | |
| **3.** | | | |
| **4.** | | | |
| **5.** | | | |
| **6.** | | | |
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| **14.** | | | |
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| **37.** | | | |
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| **40.** | | | |
| **41.** | | | |
| **42.** | | | |
| **43.** | | | |
| **44.** | | | |
| **45.** | | | |
| **46.** | | | |
| **47.** | | | |
| **48.** | | | |

**DATE:**

**SIGNATURE OF THE INVESTIGATOR** **SIGNATURE OF THE GUIDE/HOD**

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**FORM VII**

**ADVERSE DRUG REACTION FORM**

Name: _____ OPD/ IPD No : _____

Age: _____ Gender: _____

Date of trial commencement: _____

Date of withdrawal from trial: _____

Description of adverse reaction:

_____

_____

Date:

Station:

**SIGNATURE OF INVESTIGATOR** **SIGNATURE OF THE GUIDE / HOD**

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**FORM VIII**

**WITHDRAWAL FORM**

Name: _____ OPD/ IPD number: _____

Age : _____ Gender : _____

Date of trial commencement: _____

Date of withdrawal from trial: _____

**Reasons for withdrawal:**

| | YES | NO |
|---|---|---|
| • Long absence in without reporting | ☐ | ☐ |
| • Irregular treatment | ☐ | ☐ |
| • Shift of locality | ☐ | ☐ |
| • Increase in severity of symptoms | ☐ | ☐ |
| • Development of severe adverse drug reactions | ☐ | ☐ |

Date :

Station :

**SIGNATURE OF INVESTIGATOR** **SIGNATURE OFGUIDE / HOD**

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